

THE VALUE ADDED TAX,
WITH REFERENCE TO SOUTH AFRICA.

Thesis submitted in fulfillment
of the requirements for the degree
of Master of Arts at the University
of Cape Town.

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C H A P T E R 1.

INTRODUCTION, SUMMARY & CONCLUSIONS

There has been a growing interest in recent years in the Value Added Tax (hereinafter referred to as the VAT). Interest in tax reform is perennial but the factor which has generated such wide interest in the VAT has been its adoption by the member countries of the European Economic Community (EEC). The recent entry of Britain into the EEC and her adoption of the VAT have increased South African interest in the system because of the strong trading ties between our two countries. The Franzsen¹ commission on taxation in South Africa gave some attention to the VAT but in their own opinion not enough. This is clear from their statement:

"The Commission is aware of the fact that a transition from the selective sales tax which rests on a commodity basis to a Value Added Tax, which is essentially a turnover tax, implies important administrative changes. It is felt, nevertheless, that the Value Added Tax merits further study".

This thesis hopes to satisfy some of that need for further study. The aim of the thesis is not to arrive at a definite conclusion as to whether South Africa should or should not adopt the VAT, indeed, it may be impossible to answer this question completely objectively. Rather the thesis sets out to examine the implications, both theoretical and practical, of a VAT, and to present certain guide-lines as to what may constitute the best form of a VAT should it be decided to introduce this mode of taxation. There is no separate section on South Africa. Instead, the implications for South Africa have been integrated into the main body of the text. For this reason, the emphasis throughout has been on the VAT replacing the selective sales tax and, to a lesser extent, the profits tax. It is felt that the selective sales tax would be the tax most likely to be replaced by the VAT in South Africa, and that the added revenue which could be collected from the broader-based VAT could possibly be off-set against the revenue lost on a reduction in company profits tax. Such a measure would certainly be well received among business men.

Chapter 2 of the thesis gives a brief history of the VAT. The aim is to show that the VAT was not simply created in its final form, but rather that it represents the most refined form of a turnover tax which has been modified through successive stages in response to problems which have occurred in each of the preceding stages. In fact, this process of development does not seem to have ended and it is interesting to note that countries who have come on to the VAT more recently have not adopted every aspect of the French system. In particular, they have tended to simplify the administration by using fewer rates, a different credit mechanism, and a simpler system of collection and inspection.

Chapter 3 discusses the various questions relating to the tax base. It begins with the discussion of the nature of the base in theoretical economic terms. This is followed by an analysis of the effects of different modes of calculation upon the nature of the base. The advantages and disadvantages of the different methods of calculation are examined as are the anomalies which may occur under systems of multiple rates. It is argued that the method of calculation which gives rise to divergences

between nominal and effective rates is both unnecessary and unfair. There is also a general discussion on depreciation in relation to the VAT, exemptions and zero rating.

The results of the preceding discussion are incorporated in an attempt to define a possible base for the VAT in South Africa. While wishing to maintain, as far as possible, the essential homogeneity of the VAT for reasons of horizontal equity, neutrality and administrative ease, it is recognised that there will be some special categories of taxpayers who should be excluded from the base. It is argued that small businesses with turnovers of less than R10 000 per annum, and financial institutions, should be excluded from the base for administrative reasons. It is also argued that, at least in the beginning, the destination principle should be adopted for exports, which would effectively exclude them from the tax base. Although the need to give favourable treatment to the essentials of life, particularly food, is recognised, it is tentatively suggested that with regard to the particular structure of the agricultural industry in South Africa, the European system of zero rating should not be adopted. Instead, an alternative system is proposed

whereby the prices of the essential foods could be kept down by means of subsidies to the marketing boards.

Finally, there is a calculation of the potential revenue which could be raised from two possible alternative VAT bases.

The discussion of equity and efficiency in Chapter 4 sets out to question some of the assumptions which are usually made regarding these concepts. Although the general contention that the introduction of a VAT implies a trade-off between some loss in vertical equity and some gain in neutrality and horizontal equity is not cast aside: The chapter points to some of the deeper theoretical work which shows that the assumptions upon which these analytical results are based may not always hold.

Chapter 5 on Shifting and Incidence follows upon the discussion of equity. It discusses the nature and extent of shifting and incidence in terms of the general theoretical framework and in the South African context. It also cites the results of certain empirical studies overseas which may be relevant to South Africa.

The use of the VAT as a fast-reacting instrument of stabilization policy has often been cited as one of its advantages. Chapter 6 explores this contention and concludes that adjustments in VAT rates would probably have a quick positive effect on consumption, but that the effect on investment is far less certain. The effectiveness of the VAT as an automatic stabilizer is again uncertain. There are arguments both ways, but on a priori reasoning it is concluded that in so far as VAT replaces selective sales taxes in South Africa it will improve automatic stability. The results of certain econometric models and the European experience of the VAT as a stabilizer are examined and they tend to confirm that the VAT has some potential as an automatic stabilizer. However, attention is drawn to the fact that these results may not be applicable in South Africa.

Finally, Chapter 7 explores the administrative complexities of the VAT. It also examines some of the statistical possibilities of the system. As in the case of the Chapter of the VAT base, there is an attempt to define a system which would be appropriate to South Africa.

Basically, the aim is to simplify administration as much as possible by avoiding the pitfalls of the early French system and by taking advantage of the improved procedures which have been adopted by later converts to the VAT.

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REFERENCES:

1. "TAXATION IN SOUTH AFRICA"
First Report of the Commission of Enquiry
into Fiscal and Monetary Policy in South Africa.
November 1968, Pretoria.
2. Para. 204, IBID.

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CHAPTER 2.

HISTORY:

The indirect tax systems in Europe seem to have followed an evolutionary process of development, with the VAT as the latest, most sophisticated of the turnover taxes.

The French system developed through five clearly discernable phases, whereas most other countries, who adopted the VAT later and were thus able to benefit from the French experience, went straight from the more primitive forms of the turnover tax to the VAT. The need for tax harmonization within the European Economic Community has also provided a stimulus to the adoption of the VAT.

The phases of this development in the cases of France and Germany are presented in the historical summary below.

1. Cascade Tax:

A general tax on turnover without any allowable deduction for previous taxes on the inputs.

It was introduced in Germany (1918) at a rate of 0,5 percent and France (1920) at a rate of 2,0 percent. It led to cascading because tax was being paid on prices which already included an element of tax.

2. Single Stage Selective Taxes (Taxes Unique):

The disadvantages of the cascade taxes, such as the incentive towards vertical integration, caused considerable criticism. Thus taxes were introduced, for certain categories of goods, which were levied at a single stage in the production process. These "taxes unique" relieved the product of liability to the turnover tax (France 1926).

3. Single Stage General Tax (Regime Suspensif):

Under this system all products were subjected to tax but actual payment was suspended until the last stage in the production chain. This eased the administration burden of categorizing taxpayers, particularly those with mixed product lines. The "regime suspensif" also allowed for a deduction of taxes paid on goods which were physically consumed in the production process, but not for fixed capital inputs (France 1936).

4. Fractional Payments (VAT):

Whereas previously goods were transferred between producers free of tax with the burden falling on the last in the chain, each producer now paid his share, but was allowed to deduct the tax included in the purchase cost of his input. By this method each taxpayer only paid tax on the value which he added to the product, hence the name (France 1948).

5. Financial Deduction (VAT):

The financial deduction referred to capital goods which were now included as allowable deductions.

The West Germans were so dissatisfied with the cascade tax that they adopted the VAT in January 1968 although the EEC directive required them to adopt it only in January 1970.

From the pattern of these developments, it is clear that as changes were introduced to overcome weaknesses in the system, so new problems appeared. The system was then further refined at each stage to eliminate the new problems.

For example, the 'Taxes Uniques' in step 2 were intended as a measure to overcome the ⁽¹⁾double taxation of the cascade taxes. However, the 'Taxes Uniques' proved difficult to administer. There were different rates for different products which gave rise to confusion and provided scope for evasion. The problems of administration were compounded by the rapid growth in the number of products subjected to tax. These 'Taxes Uniques' which were similar to the selective sales taxes, in South Africa, were succeeded in France by the 'regime suspensif' which was a single stage general sales tax. This definitely improved the system, but the French found that the single stage provided an incentive to evasion¹. Thus they introduced the VAT with its unique feature of fractional payments. This fractional payments system has certain other advantages besides the control of evasion. For example, it places a ⁽²⁾smaller burden on the retailer than the single stage retail sales tax. This is particularly important in the case of competitive markets, and for the small retailer. In such cases the retailer may be forced to extend credit to his customers, yet he has to pay his tax in cash. The single stage system implies that one member of the production chain has to provide cash

to cover the tax liability of other members of the chain. However, in the fractional payments system the actual payment is spread among the members of the chain.

Another advantage of fractional payments is the complete ⁽²⁾ elimination of the cascade. The cascade which occurs under the selective sales taxes is not completely eliminated by the single stage retail tax because products which are sold as 'final goods' may be used as inputs in a later process without the possibility of deduction. An example would be the motor car battery which may be sold as a retail good or as a motor car component.

The Financial Deduction of stage 5 was introduced in order to prevent the double taxation of capital goods. The nub of the argument was that by restricting the deduction to raw materials, capital goods which were used up in the process of manufacture, thus contributing to the final value, were being taxed as part of value added whereas they had already borne tax at the time they were acquired.

Future Development:

This process of development is continuing and it is possible to predict further probable modifications.

The group 'Fiscalite' reporting to the Finance committee for the Sixth Plan in France has recommended that the administration be simplified by reducing the number of different rates and by adjustments to the credit mechanism². These adjustments, which are discussed in the section on administration, are likely to be introduced.

Indeed the most likely trend in the future development of the VAT will be towards greater administrative simplicity.

REFERENCES:

1. KAUFFMAN J.R., "Le Regime Definitif" in
La Reform de la T.V.A., Paris 1968. pp. 14-17
2. 'FISCALITE' "Rapports des Comites du VI e
Plan", La Documentation Francaise Paris 1971.

C H A P T E R 3.

THE VAT BASE, ITS MODE OF CALCULATION AND POTENTIAL REVENUE YIELD:

3.1. THE DEFINITION OF THE BASE:

Historically the concept of a tax based on value added goes back long before the introduction of the VAT in France in 1954.* As early as 1932 a Brookings Institute report on the Alabama system¹ observed that a tax on the social dividend would be distributed according to a firm's share of the total income earned within the State. The report recommended a base which was described as approximating value added by manufacture as estimated by the United States Bureau of the Census. This early conceptual use of value added as a measure of a firm's contribution to the social product was criticised because on the one hand it excluded products which the firm manufactured for itself, and on the other hand it included depreciation and certain indirect taxes which should have been deducted in computing a proper national income. National income accounting has been greatly developed since the early '30s and national income

* THIS DATE REFERS TO THE FINANCIAL VARIANT OF THE VAT. THE FRACTIONAL PAYMENTS SYSTEM HAD ALREADY BEEN ADOPTED IN 1948.

or national product type bases can now be fairly accurately measured by a number of techniques. Our question is no longer "how good a measure of the base is given by value added in manufacture?" but rather "how appropriate is the national income, or national product concept of value added as the base for the value added tax?".

There are three ways in which the VAT base, as customarily defined, differs from the national income idea of value added. Firstly, there is the question of replacement expenditure on capital equipment. The VAT does not distinguish between replacement investment and new investment. Under the VAT system all investment is deducted from the base. Whereas in national income accounting a distinction is usually made between the two. Secondly, there is the question of services by professional men. Often these are excluded from the VAT base, but they are certainly included as value added in the national income system. The same applies to salaries of Government servants. These salaries add to national product but again they are excluded from the VAT base. Thirdly, the two systems are the reverse of each other, in their handling of international trade. The

national income definition includes exports in value added, since the work done in producing the exports was done in the home country. Conversely exports are usually excluded from the VAT base. Imports are also handled in contrary fashion by the two systems. Whereas the national income base excludes imports on the ground that the work was not done in the home country, they are subjected to tax under the VAT.

Now if the VAT base is indeed so different from the normal economic definition of value added, one wonders why it is called a value added tax at all. Indeed, it would probably be more correct to call it a fractionated consumption tax. However, it is probably a little late to change the name now.

Rather let us turn our attention to those factors which distinguish the base of this tax from the bases of the other consumption taxes. The essential distinguishing features of the VAT are: (a) that it is fractionated which means that payment is made at many stages, rather than at a single stage; (b) that the base is very wide; partly as a consequence of the fractionation; (c) that it is probably the most general of the sales taxes.

3.2. INCOME VERSUS CONSUMPTION:

Essentially two types of tax base have been distinguished for VAT. The Income type base and the Consumption type base. The so called additive procedure is used to derive the Income type base and the subtractive procedure is used to derive the Consumption type base. The subtractive procedure for the consumptive type base was selected for the E.E.C. countries but Japanese accountants preferred the additive procedure or an income type base, Japanese tax officials, however, wanted the subtractive procedure to facilitate cross checking to detect evasion². The differences, and at the same time the similarities of the two procedures become evident once we consider the modes of calculation. The subtractive method is simply to subtract total input from total output, thus value added is defined as being equal to output minus input. The difference between the total physical output and input leaves us with a residual of wages plus profits. The additive procedure utilises this result by going directly to wages plus profits for its base.

3.3. DIRECT AND INDIRECT METHODS:

Now the additive and subtractive procedures can

again be broken down into two alternative modes of calculation. These are the direct and indirect methods. Consider first the subtractive procedure. The direct method would be to begin by getting the difference between total output and total input and then applying the tax rate to the difference. The indirect method would be to apply the tax rate to the output and the input separately and then to deduct the tax on input from the tax on output. Although algebraically the results are identical, the practical effects are different. Under the indirect system the taxpayer first has to determine that VAT was paid on his inputs before he is able to claim a reduction in determining his own liability. Whereas, under the direct procedure he merely calculates the difference between his own sales and his purchases. It is this necessity for proving by way of invoice that members of the chain at early stages have paid their VAT which led to this indirect subtractive method being referred to as the invoicing system. The invoicing feature of this system is regarded as a great advantage by many tax officials because they claim that the necessity of each member in checking the VAT liability of previous members in the chain of production provides a built-in policing mechanism.

The E.E.C. reason for adopting the subtractive method was that it enabled the tax content of any sale to be established immediately. This facilitated the working of their customs union which employed the destination principle, whereby goods are exempted from taxation by the exporting country and taxed in the importing country. Clearly, therefore, the tax content has to be known in order to effect the necessary rebates. It had the further advantage for the E.E.C. countries of being acceptable within the bounds of the G.A.T.T. rulings on fair trade. The fact of rebates being allowed to exporters implies a hidden subsidy to exporters in those countries which are on the VAT.

The major disadvantages of this method appear when there are more than one rate. Firstly, the administration becomes more complex as goods have to be classified into one or another category. Often the distinctions are subtle and taxpayers will try to find arguments for qualifying under the lower rates. Furthermore, there is a problem known as the "catching up" effect. This problem is most clearly explained by way of an example.

Assume that there are two VAT rates operating, 5% and 10%. Assume further that the inputs of our company were subjected to tax at the lower rate of 5% but that the outputs are subject to a normal rate at 10%. Now if inputs are valued at R100 and outputs at R150 then the value added is R50. Under the direct method the 10% tax rate would be applied to this R50 and the VAT liability would be R5. However, under the indirect method the 10% tax is applied to the R150 output yielding R15, but a deduction of only R5 is allowable because the VAT on the input was only R5. This leaves a liability of R10, which is greater than the liability under the direct method. Thus the brunt of the tax is borne by those on a higher rate. Conversely if the inputs were subject to the 10% rate and the outputs were subject to the lower 5% rate, the lower rated taxpayer would get all the benefit of the tax relief, part of which should have gone to his predecessors in the chain. Clearly, this catching up effect would not apply in the case of only one rate for the subtractive procedure. We shall return to a fuller discussion of this catching up effect in the section on administration.

The direct additive method has the major advantage of simplicity. The concepts of wages and profits

are both familiar to the revenue department and to the accounting profession. Wages are already determined regularly under the P.A.Y.E. system and present no problem. Profits too are easy to account for as they are audited annually for income tax purposes and it would be little extra burden to audit the same profit for the VAT. However, this is where the simplicity ends. Profits are only audited annually and in order for this system to work correctly, the VAT would also need to be collected annually. It is not reasonable to expect firms to carry the extra administrative burden of drawing up their income statements for tax purposes more than once a year. If the VAT were only collected annually, this would reduce the revenue flow, decrease its value as a statistical source and reduce its potential as a fiscal weapon.

The final divergence in modes of calculation which we shall consider is the decision between tax inclusive and tax exclusive prices for the base.

3.4. NOMINAL AND EFFECTIVE RATES:

If the price upon which the tax is calculated is taken exclusive of the tax then there is no difference between the stated rate of taxation and the actual effective rate. This is the mode of application in most of the E.E.C. countries and it is in accordance with the Second Directive of the Council for the

E.E.C.³. Presumably the French will eventually be forced to comply with this directive but at the moment they operate an alternative system. In France the tax is levied upon the price inclusive of tax. The effect of this application is to raise the real rate of tax above the nominally stated rate. Consider for example the case of a seller who wishes to maintain a net turnover of R100 in the face of a VAT rate of 10%. Under the price exclusive-of-tax mechanism, his tax will be R10. This R10 would be added to the R100 making a final price of R110. However, under the tax-inclusive mechanism he would be required to pay a tax of 10% on the R110. Already this raises his basic rate from 10% to 11% on the original R100. Now if he pays the R11 he will only be left with a net turnover of R99. Should he wish to maintain this turnover at R100 he would be required to raise his final selling price to R11,11 so that when the 10% rate is applied to this price he is left with the desired residue. The final effective rate would then be 11,1%.

The author is opposed to this aspect of the French system and does not recommend a system which allows a divergence between the real and the effective rate in South Africa. This mechanism has the

overtones of a subterfuge by the Government to disguise the real rate of the tax from the taxpayer. It conflicts with the well known principle of taxation that the taxpayer should consider that he is being fairly treated if he is to be expected to co-operate with the authorities⁴. Particularly in South Africa with its complex social structure where Government is vested largely in the hands of one ethnic or racial group among many, there is a great need not to create mistrust between taxpayer and tax collector. Further, this seems to introduce an unnecessary complication into the pricing.

3.5. TREATMENT OF DEPRECIATION:

The question of depreciation is still one of the most controversial in the field of Public Finance. The fundamental principle is simple. Given that there are inputs which, though not completely used up, will be partly worn out in the process of production, the portion of these inputs which is consumed in production should be allowed as a deduction from output in determining value added. In practice, this principle turns out to be very difficult to apply and even in the area of national

income accounting, where depreciation is calculated, the measurement is in the nature of a rough approximation to the principle. Firstly, there is the problem of human as well as physical capital. Clearly, humans wear away with time. Marshall for one, recognized this when he referred to "the investment of capital in the rearing and early training of the workers of England"⁵. More recently a number of economists have come out in favour of depreciating human capital. In practice, however, depreciation has been restricted to physical capital.

Assuming we follow the usual procedure and allow depreciation only on physical capital, which method would be the most appropriate? Consider the question of the rate of decay of the assets. Some techniques assign a fixed life period to each asset and depreciate it in equal instalments until the end of its "life". Others are based upon constant or varying percentages of a reducing value for the assets. Obviously, these techniques are just approximations because we cannot know for sure how much of the asset has been used up in a particular period. Furthermore, there is the problem of whether to use current or historical prices,

particularly in times of inflation. Now the varying of the depreciation period has an important distorting effect upon the value of different kinds of investment. The shorter the time period of the depreciation the smaller is the burden of the tax, because the tax deduction accrues in an earlier period and therefore its discounted net present value is higher. Now if we have two investments with different life periods the one yielding a return over ten years and the other over five years, but these investments have the same internal rate of return, then they are by definition equally profitable. If the tax were to change the internal rate of return of the one vis a vis the other, then the tax would be distorting investment choice and would not be neutral. This has been shown to be the case where depreciation deductions are allowed over various time periods⁶. Neutrality is achieved only in the case of instantaneous depreciation.

This instantaneous depreciation is a feature of the VAT which is consistent with the goal of a neutral tax. Another reason why instantaneous depreciation is preferred for the VAT is that it should be a long term stimulus to investment because the immediate deduction reduces the net present

value of the burden of the tax, assuming that a policy of promoting investment is socially desirable.

Finally, it is far easier to administer than a system which distinguishes capital and non capital purchases and varies the deduction for capital purchases.

3.6. EXCLUSIONS FROM THE VAT:

In spite of the desire to make the VAT as general as possible, it has been found necessary in all the countries which have adopted it, to exclude certain special categories from the tax base either for social or for administrative reasons. The most obvious way to do this is simply to exempt those categories of taxpayer from coming into the VAT system. This has the administrative advantage of reducing the number of tax payers. However, exemption is not quite as equitable as it would seem superficially. The exempt enterprise has to pay for the advantage of not paying tax by carrying the burden of not being able to deduct the VAT paid on its inputs. Where the enterprise has large investments in capital stock this can amount to a substantial disadvantage. Furthermore, double taxation can occur where the enterprise is

intermediate between two enterprises which are both subject to the VAT. In this case it is unable to pass on the tax credit in its purchases and so the purchase element in its sales will be taxed again in the hands of the recipient⁷.

To overcome this problem a system of zero rating has been introduced in a number of countries.

Originally, this measure was adopted in the second directive of the E.E.C. to comply with the wishes of the Dutch Government⁸ who wished to retain their freedom to make decisions regarding the total tax burden and its distribution among the various sectors of the population in their country.

According to this system, enterprises which are favoured for one reason or another, still come into this system which means that they can deduct the VAT content in their inputs and also pass it forward as a credit if they are at an intermediate stage, but they themselves are not subjected to tax because a zero rate is applied to their sales.

Although zero rating is thus more equitable than exemption, it suffers from the general administrative disadvantages which apply to multiple rates.

3.7. A POSSIBLE BASE FOR THE VAT IN SOUTH AFRICA:

When considering a possible value added tax base for South Africa, the problem of the very skewed

distribution of income immediately springs to mind. Clearly, a case can be made for keeping down the prices of essentials in South Africa with its particular distribution of income. This is one of the reasons why food has been given special treatment in all of the European systems. Another reason, of course, may be the political pressure of farmers. However, this has to be balanced against the administrative complexity which is introduced with each special case, and also the need to maintain the generality of the base in the interests of horizontal equity and neutrality. Having regard to these opposing goals, a tentative system might take the following form.

The VAT base would be as wide as is practical or feasible allowing the minimum exclusions.

Administratively, it would probably be necessary to exempt services in the early stages, but as experience is gained in running the system, they could be included. Existing excise taxes will be maintained, but adjusted to take account of the VAT so as to leave the final price of the good unchanged. Services are exempted, rather than zero rated, because zero rating would negate the administrative advantages to be gained from exemption. The base would be of the consumption

type using the subtractive procedure which is used in the E.E.C. This decision is discussed under the section on administration.

Let us now consider the case for inclusion or exclusion of certain special categories from the South African VAT base.

3.8. GOVERNMENT:

At first sight it would appear illogical for Government agencies to be required to pay the tax because this would merely involve the transfer of funds from one branch of Government to another. However, there are both theoretical and practical objections to such a policy. Numerous debates on the subject have taken place in both the National Assembly and the Senate in France. The principle was most succinctly stated by Monsieur Wedert⁹. If, he said, private consumption was alone in supporting the VAT the tax would not be neutral because the price comparisons between the two types of consumption goods would be falsified. What he was assuming of course was that there was competition between Government run industries and others. This was a perfectly reasonable assumption since the provision of a good by the State does not necessarily imply that the private sector should be prevented from providing that good as well.

However, there are some industries in South Africa where competition with the State is not only non-existent but is prohibited by law. In such cases there would be no conflict in principle to their exclusion from the VAT base. Nevertheless, there are strong practical reasons for not excluding state enterprises. Consider for instance the case of the South African Railways. Railage costs or even ordinary train tickets for travelling businessmen are inputs to businesses. Thus these businessmen would want to be able to deduct the VAT from their outputs. Furthermore, the Railways will have included the cost of its inputs in its price and there will be an accumulation of previous VAT paid on inputs by the Railways unless this credit can be passed on. Obviously, similar situations are likely to occur in the Airways, Post Office and many other State run enterprises.

At one stage local authorities in France wanted to be excluded from paying VAT on their purchases as well as their sales¹⁰. Clearly this is not feasible administratively because it would imply that each seller would have to identify the purchaser before determining the price and it would lead to complications far greater even than multiple rating. The balance of the argument, therefore,

would seem to be in favour of including Government enterprises in the VAT base. Clearly, Government agencies would not actually be expected to render a cash return, but would merely be expected to make the requisite book entries from time to time.

3.9. SMALL BUSINESS:

The argument for exempting small business establishments is an administrative one. It is generally felt that the inclusion of small business will increase the number of taxpayers greatly. Since their turnover is small the revenue yield would not be very great, thus the cost of collecting and inspecting their taxes would probably outweigh the return. Furthermore, many small businesses keep very primitive forms of accounts, if they keep accounts at all. If they are forced to keep the accounts necessary for the correct and smooth operation of the VAT, they are likely to become uncooperative.

On the other hand, there are two principle arguments against exemption. Firstly, there is the argument that in order to retain the essential homogeneity of the VAT, the number of exceptions to the general rule should be kept to an absolute minimum. The second argument is based upon the fear that if the small businesses are removed from the tax base, it will become too narrow to provide

the required yield.

In assessing the opposing arguments our choice is complicated by the fact that there has been a tremendous diversity in the choices made by the European countries. In the Netherlands and in France for instance, businesses with a tax liability below a specified limit are exempted from the tax. Denmark, Germany and Britain, however, have chosen to base the exemption upon the turnover. According to the Nedo Report¹¹, exemption of small businesses in Germany with turnovers of less than £1200 per annum had the effect of reducing the number of taxpayers by 1/3rd. While this measure greatly eased the administrative problems it does not seem to have narrowed the base unduly. The exemption limit adopted by the British when they adopted the VAT in April 1973 was £5000.

→ In order to establish a policy for South Africa we shall assume an exemption for small businesses whose turnovers do not exceed R10 000 p.a. The choice between the turnover and the liability type bases seems to be fairly clear cut. There is no reason to complicate the issue by working out a tax liability when the company is going to be exempted afterwards. Therefore, a turnover base

is preferred. Referring to Table 1 below, we note that an exemption limit at a turnover of R10 000 per annum would involve 2177 out of a total 19142 establishments, or 16.6%. Taking the mid point to be the average value for the three size groups we compute an overall average value of gross output for these groups of R10 637 000. Now on a total output for manufacturing of R5 983 163 000, this works out roughly to a narrowing of the base by one part in 600, for a reduction of 1/6 in the number of taxpayers. Unfortunately, the available statistics for other industries are not broken down into size groups with the result that similar calculations could not be performed for them. However, the manufacturing industries currently contribute 23% of G.N.P. and their share of the total is growing, thus we may consider it to be an important indicator.

TABLE 1:

GROSS OUTPUT BY SIZE GROUP IN MANUFACTURING 1967/68 ¹²

<u>Size Group:</u>	<u>Average Value:</u>	<u>No. of Esta-</u>	<u>Average Group</u>
<u>(R'000s)</u>	<u>(R'000s)</u>	<u>blishments:</u>	<u>Output:</u>
0-2	1	441	441
2-4	3	489	1467
4-10	7	1247	3729
	Total average output	<u>2177</u>	<u>10637</u>

Total gross manufacturing output (R'000s) 5 983 163

Total number of establishments 13 142 000

Source: Adapted from 'South African Statistics'

Table L 26 Department of Statistics, Pretoria 1972.

The fear of a substantial diminution of the tax base does not seem to be very real at an exemption limit of R10 000. However, the administrative arguments in favour of exemption appear to be very forceful. Zero rating is not a feasible alternative since this would negate the administrative advantage of reducing the number of taxpayers through exemption, yet the State would receive no benefit. If a small business considered itself to be at a disadvantage through not being able to deduct VAT on its inputs or because of its inability to pass on VAT credits, then it should be allowed the option of coming onto the VAT as a normal taxpayer rather than at a zero rate.

3.10. FINANCIAL INSTITUTIONS:

Wherever the VAT has been instituted, financial institutions have been exempted from the base.

In some European countries a separate tax independent of the VAT has been imposed instead. The reasons for according special treatment to financial institutions, are sufficiently persuasive in the view of the author for us to follow this practice in our suggested base for South Africa.

Firstly, there would be an element of double taxation under the indirect subtractive method.

This is because interest and dividend receipts which are taxed in the hands of financial institutions, would not have been allowed as deductions from the VAT base of the non-financial company. Their inclusion in the base of both the financial and the non-financial company gives rise to a double taxation.

This problem of double taxation would similarly apply to rental receipts in the hands of financial institutions. Special modes of calculation of the VAT have been devised notably by ITO¹³ in Japan to overcome this problem. However, they have not been entirely satisfactory because the effect would be to give rise to administrative problems in the simultaneous operation of two different systems of calculation for the VAT.

A second problem arises in the actual calculation of the VAT for deposit receiving institutions. The deposit received by a bank for instance, would have no VAT content. Therefore, there would be no credit offset against the VAT liability on the interest received by the bank. Clearly, this could give rise to ludicrous situations in which the bank was faced with a VAT liability in excess of the Value Added. Consider the example of a

bank which received a deposit of R100 upon which it paid an interest rate of 10%. If the VAT rate operating was 10% and the bank lent the money at 11%, then it would be faced with a VAT liability of R1-10 whereas its own margin would only be R1. Although this may be an unusual example, it serves to dramatise the potential inequity of the system.

Life assurance companies are another very difficult type of financial institution to handle under the VAT. The crux of the problem is the long time period which elapses between the receipt of premiums and the payment of claims. The determination of expected present value for the claims to be offset against the premiums is further complicated by inflation. The issue of life assurance has not been settled in principle or in practice, and possibly the wisest decision is the usual one, which is simply to leave it well alone.

Finally, the administrative advantage of exempting financial institutions, is clear when one considers the vast number of transactions which would need to be checked. Of course the process could be simplified by adopting the additive method of

calculation, but the simplest procedure is exemption.

3.11. THE AGRICULTURAL INDUSTRY:

There is without doubt a strong case in terms of the ability to pay criteria for keeping down the prices of the essentials of life. Partly for considerations of equity and partly because of the political power of farmers, agricultural products have been subjected to lower rates or even zero rates in the European countries under the VAT. Although farmers may be exempted they usually opt to come onto the VAT in order to derive the benefit of the VAT content credit of their inputs. The zero rate is particularly agreeable to farmers where they are able to obtain cash refunds on their VAT inputs without paying any tax on their outputs. The European solution of low rates or zero rates for farmers may be popular among farmers, but it is not necessarily the best overall solution for the country. There are the usual administrative drawbacks associated with more than one rate, and if the farmer is not at the final stage in the process there is the added inequity of the catching up process (see section on administration).

Having considered these difficulties in the light of the particular marketing structure which applies to agriculture in South Africa, the author would like to suggest an alternative system which could be as equitable as zero rating and is free of the multiple rate problems. Essentially, the idea would simply be to tax agriculture at the normal VAT rate. However, the prices of important foods would be stabilised by means of Government subsidies to farmers. The existence of the Marketing Boards and the extent of their control in South African agriculture, would make this a highly feasible possibility in South Africa. The du Plessis Commission¹⁴ on agriculture reported that products representing approximately 87% of the total average value of agricultural output were subject to price control to a greater or lesser extent in the years 67/68 to 69/70. Thus we see that there is wide central control of agricultural prices in the country. Furthermore, it is already the practice to subsidize certain staple food stuffs¹⁵, namely butter, bread, maize and, to a lesser extent, grain sorghum. All that would be required would be an increase in the value and perhaps the breadth of the subsidy.

The following are some of the advantages associated with such a system.

Firstly, it would not be difficult to administer and it would tie in well with the existing arrangement of control through the Marketing Boards.

Secondly, farmers would not suffer the loss of tax credits on their inputs which would arise if they were exempted from the base. At the same time, the avoidance of multiple rates would ensure that no other producers were prejudiced.

Finally, the inclusion of farmers in the VAT could help to achieve another recommendation of the du Plessis Commission. The Commission pointed out that poor management was one of the biggest problems in South African agriculture. It noted further that the keeping of the proper system of farming records played an important part in improving the managerial ability of farmers. For this reason the Commission was not in favour of outside organisations keeping the records. It recommended that the farmer himself should be responsible for the basic bookkeeping, so that he could keep himself informed of conditions in his farming operations and thereby increase his productivity¹⁶. There can be few better stimuli to record keeping than a tax system which allows the deduction of invoiced inputs!

3.12. EXPORTS AND IMPORTS:

The two principles involved in the decision to include or exclude imports and exports from the VAT Base, are the Origin principle and the Destination principle.

The Origin principle states: the tax revenue should accrue to the home country and thus production should be taxed in the country of origin. This concept is consistent with the national income definition of Value Added, whereby exports are included in the base and imports are excluded.

The Destination principle is the reverse - Taxing imports and excluding exports. Now it has been argued that taxation according to the Destination principle conflicts with the laws of comparative advantage and specialisation¹⁷. Why then should it have been adopted by the E.E.C.? It appears that the major motivation was the possibility afforded by this system of providing support to exporters without contravening the G.A.T.T. rules on fair trade. This has, of course, been criticised by G.A.T.T. members who are not on the VAT, but the Destination principle is likely to be retained for countries outside the E.E.C., although it is intended that the Origin principle will be adopted for intra E.E.C. trading.

In South Africa there would presumably be strong political pressure from exporters to adopt the destination principle, indeed it would be very difficult not to follow this principle while it is being operated by a major trading partner such as the E.E.C. However, the prospect of independent homelands within South Africa raises some interesting questions. If each of these Bantustans operates its own fiscal system, then it may be better to adopt the Origin principle, at least within Southern Africa. These regions will be in great need of development funds and it would be as well for the tax revenue from the homeland industries to accrue to their Governments.

3.13. POTENTIAL YIELD OF THE VAT:

Assuming a flat rate at 10%, we shall calculate the yield on two possible tax bases. Tax Base A is exclusive of services and Tax Base B includes services. The alternative bases are contemplated because the authorities may decide to initiate the system exclusive of services for administrative simplicity and later extend the base when experience has been gained in administering the tax.

It is assumed that the excise taxes will be adjusted to account for the VAT and that foods will be treated favourably, either by means of subsidies to the agricultural boards or by zero rating.

TABLE 2.

COMPOSITION OF PRIVATE CONSUMPTION EXPENDITURE¹⁸

I T E M	1972	PERCENTAGE OF TOTAL
	(R Millions)	
Durable Goods	987	10,4
Semi-Durable Goods	1715	18,1
Non-durable Goods	3836	
Food, beverages & tobacco	3016	31,9
Household fuel & power	267	2,8
Gasoline, oils & greases	262	2,8
Other non-durable goods	<u>291</u>	<u>3,1</u>
Services	<u>2916</u>	<u>30,8</u>
Total Private		
Consumption Expenditure	9454	100,00

Source: Adapted from: The Quarterly Bulletin of Statistics, S.A. Reserve Bank, March 1973, Table S.73.

The bases are derived from Table 1. Food is excluded on the assumption of favourable treatment and the balance of the deductions are to avoid double counting with the excise tax yield.

	<u>Tax Base A</u> <u>(excluding Services)</u> (R million)	<u>Tax Base B</u> <u>(including Services)</u> (R million)
Durable goods	987	987
Semi-durable goods	1715	1715
Non-durable goods	3836	3836
Services	-	2916
Total	6538	9454
Less deductions:		
Food, Beverages, Tobacco	3016	3016
Gasoline, oils & grease	262	262
Total	3260	6176

TABLE 2 : YIELD OF VAT AT 10 PERCENT (R MILLIONS):

	CONSUMPTION	SALES TAX	DIFFE- RENCE	VAT 10 PERCENT
TAX BASE A	3260	176	3084	308,4
TAX BASE B	6176	176	6000	600,0

The VAT yield on Base A would, at a rate of 10%.

represent a 75% increase over the sales tax collection

In the case of Base B there would be a 241% increase in revenue.

Clearly the yield is very much greater when services are included in the base. Furthermore, services tend to form a greater proportion of the expenditure of the upper income groups and their inclusion would tend to counteract regression in the base. However, they are difficult to administer, and it may be wise to phase them into the system only once experience has been gained in the general administration of the system.

REFERENCES:

1. BROOKINGS INSTITUTION, Report on a survey of the Organization and Administration of the State and Country Governments of Alabama. Montgomery, Alabama, 1932 1V, 340.
2. BRONFENBRENNER, "The Japanese Value Added Sales Tax", National Tax Journal, III Dec. 1950, P.306.
3. EUROPEAN TAXATION, International Bureau of Fiscal Documentation. Vol. 7 July/August Amsterdam 1967, pp. 199-206.
4. SHOUP MISSION, "Report on Japanese Taxation", Tokyo, 1949 Vol. I P.16.
5. MARSHALL A, Principles of Economics, London, Macmillan, 1938. P.561.
6. MUSGRAVE R.A., The Theory of Public Finance, McGraw Hill, New York, 1959, pp. 342-344.
7. NATIONAL ECONOMIC DEVELOPMENT OFFICE, (N.E.D.O.) London, 1969, P.16.
8. EUROPEAN TAXATION (1967), Op Cit. P.192.
9. WEDERT, J.M., "Les Collectivites Locales et La T.V.A." Debat Assemble Nationale No.1205 Juin 1971

10. Ibid
11. N.E.D.O. Report (1969), Op Cit P.34.
12. "SOUTH AFRICAN STATISTICS", Table L.26,
Department of Statistics, Pretoria, 1972.
13. ITO H, "The Value Added Tax in Japan", Annals
of the Hitatsubashi Academy, No. 1, Oct. 1950,
pp. 50-60.
14. THIRD REPORT OF THE COMMISSION OF INQUIRY
INTO AGRICULTURE, Pretoria, 1971, P.132.
15. Ibid P.114.
16. Ibid P.118.
17. KRAUSS AND JOHN3ON, "Border Taxes , Border Tax
Adjustments, Comparative Advantage and the
Balance of Payments", Canadian Journal of Econ.,
Nov. 1970 Vol. 3.
18. QUARTERLY BULLETIN OF STATISTICS, S.A. Reserve
Bank, March 1973, Table 5.73.

C H A P T E R 4.

EFFICIENCY AND EQUITY

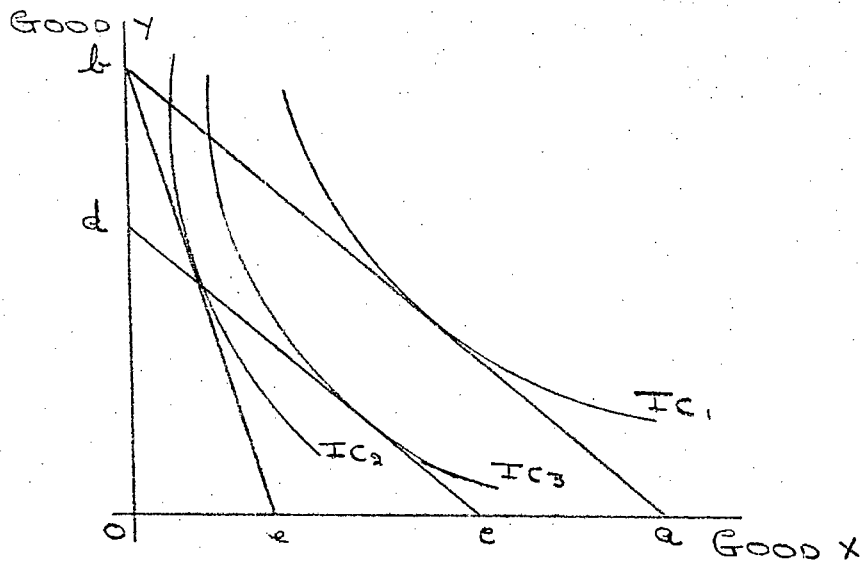
EFFICIENCY:

4.1. PARTIAL EQUILIBRIUM:

If the VAT were introduced into South Africa, it would mainly take the place of the selective sales taxes.

Let us compare the economic efficiency of the VAT with that of the selective sales taxes.

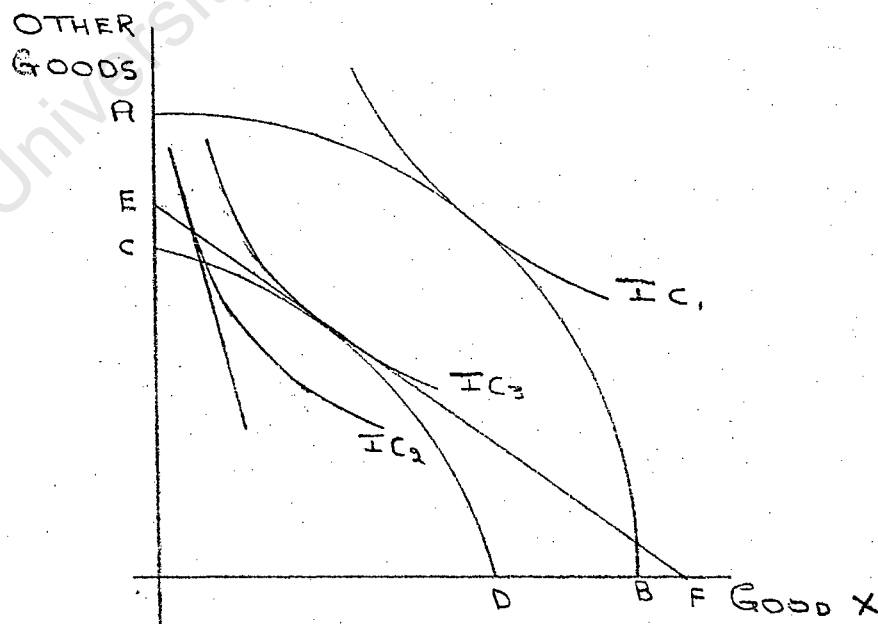
We shall use the Hicks (1939)¹ analysis. Assuming other choices to be fixed, let us consider the choice between two goods X and Y. The consumer has enough income to purchase oa of good X or ob of good Y, or some combination of the two, as shown in the diagram below. Assume an excise is imposed on good X, raising its price such that the new income line is b e. This leads to the familiar result that the highest attainable indifference curve IC_2 is lower than IC_3 which could have been attained had there been a general tax. The general tax would give rise to a parallel shift from ab to ed and IC_3 would be attainable.



4.2. GENERAL EQUILIBRIUM:

It would be heroic to assume that the conclusions of such a partial model would apply to the real world. The assumption of perfect competition to begin with is hardly realistic. Furthermore, besides the assumption that the goods are substitutes, Morag² has shown that the results of the partial model depend upon the assumption of required yield which is not entirely true in the modern world where taxation may be employed for stabilisation reasons. Friedmann's general equilibrium model (1952)³ extends the analysis to include the case where goods are produced under conditions of increasing cost, and also removes the necessity of assuming a required yield. Again the model is well known, and will only be discussed briefly.

Consider the diagram below:



The transformation curves AB and CD are concave down reflecting the increasing cost of transformation from

other goods into X. The difference between these two transformation curves reflects the amount of resources which have to be surrendered to the Government on the imposition of the tax. Now it is immediately apparent that our earlier conclusion regarding the superiority of the general sales tax (VAT) over the selective sales taxes will be retained, this is because the general tax is assumed not to change the relative prices of X and other goods. This means that there is again a parallel shift of the price line in the case of the general tax, whereas in the case of the selective tax on X the slope of the price line is changed in favour of other goods. This means that after the VAT the consumer is able to find an equilibrium at a point further to the right along CD, thereby achieving a higher indifference curve, than he would under the selective sales tax.

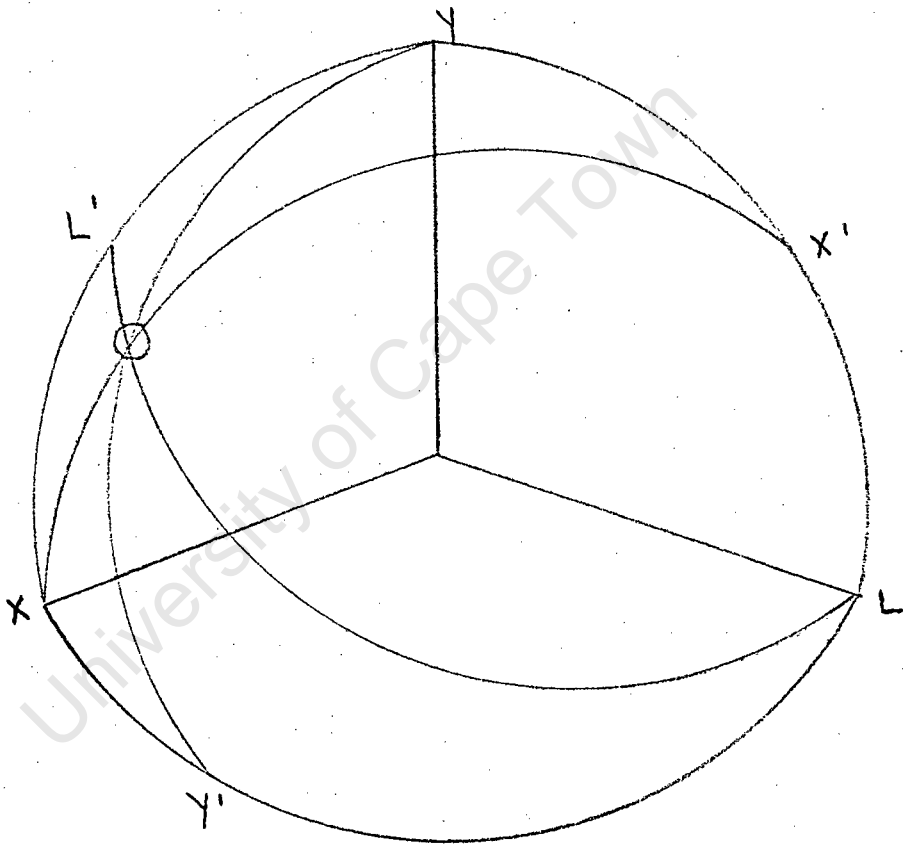
Notice also that this general equilibrium model makes the Morag objection redundant. As long as private consumption is reduced to a point on CD the amount of revenue raised is irrelevant and so we may drop the assumption of required yield.

4.3. ADDED DIMENSIONS OF CHOICE:

Thus far we have restricted the choice to two alternatives. Once this restriction is lifted it

is possible theoretically to conceive of situations in which the superiority of general taxes over selective taxes is reversed. Consider the diagram below which is based on Little's three dimensional model (1951)⁴.

FIGURE



The MRT's are the curves YX, YL and XL. From the 2 dimensional analysis we know that there would be an optimal point on each MRT where $MRT = \text{Price Ratios}$. When raised to 3 dimensions the point becomes a line.

Thus we may draw lines representing the optimum field in 3 dimensions for each of the two dimensional planes.

L'L, X'X and Y'Y.

The point of overall intersection O, is the overall optimum.

Clearly, the tax would be non optimal unless it affected all three planes equally since a general tax in only two planes would operate as a specific tax in the third plane. Thus a general tax on X and Y would not discriminate between these two but would be discriminatory in any comparison between Y and L and between X and L.

In the case of a selective tax on X there would be discrimination between X and Y and between X and L but there would be no distortion in the Y - L relationship.

The only truly general tax now would be one which included leisure. Since this is not a practical proposition the usual solution is to place selective excises on goods which are complementary to leisure. If the correct set of selective excises is chosen it is possible now to conceive of a selective tax on leisure and specific consumption which would be superior, on efficiency grounds, to the VAT.

Although this superior bundle of selective excises has been shown to be a theoretical possibility, it is not a very practical alternative because of obvious difficulties of definition, classification (with the attendant lobbying and stimulus to corruption) and administration.

4.4. VAT REPLACING PROFITS TAX:

The analysis thus far has been carried out in terms of a VAT replacing the selective sales taxes. If the introduction of a VAT were to be accompanied by a slight reduction in the company tax rate, the implications for efficiency are that there might be some stimulus to productivity, and it is possible that labour would be penalised.

Professor Sadle (1970)⁵ has pointed out that in the case of a VAT replacing the profits tax, wages as well as profits will form the tax base in the place of profits alone, and that purchases of capital goods can be credited against tax liability.

He makes it clear that capital intensive industries would be favoured over labour intensive industries. Now, it may be argued that this is a stimulus to efficiency because valuable labour resources cannot

be credited against tax liability in non profitable companies. In order to economise, these firms are forced to release the labour which is then employed in more profitable industries. However, this argument does assume that labour can move easily from one occupation to another.

In the case of unskilled labour it probably does not matter whether the labourer is unskilled at one thing or unskilled at another. On the other hand labour cannot so readily be moved between jobs which require a certain amount of training. Nevertheless the tax is unlikely to be a major disincentive to the use of labour. Rather it is likely to be an incentive to the use of a different type of labour. If indeed there is a stimulus towards mechanisation, then labour will need to be trained to operate the machines. Consequently there is more likely to be a shift from unskilled to semi skilled labour than any wholesale cut down in labour usage.

EQUITY:

4.5. THE CONCEPT OF JUSTICE:

The concept of justice in taxation has permeated the thinking of all tax authorities. Many have regarded

it as the most important of all tax principles. Equality was the first on the list of Adam Smith's maxims⁶. Simons⁷ put it as follows: "Questions of relative collection cost, of stability and flexibility of yield are relevant of course but at the centre is the question of how the burden should be allocated, of what is the most equitable system". The Royal Canadian Commission on taxation⁸ (1966 page 143) consistently gave the greatest weight to the equity of objective when faced with hard choices. They observed that "Unless the allocation of the burden is generally accepted as fair the social and political fabric of a country is weakened and can be destroyed. Should the burden be thought to be shared inequitably taxpayers will seek means to evade their taxes. When honesty is dismissed as stupidity, self assessment by taxpayers would be impossible and the cost of enforcement high".

We shall examine the justness of the VAT in terms of the two major principles of equity, the benefit and ability to pay principles.

4.6. THE BENEFIT PRINCIPLE:

The benefit approach is appealing for two major reasons. Firstly, many people regard it as fair that the beneficiaries of Government expenditure should

pay for these benefits via taxation in the proportion to which they benefit. The underlying rationale is that the Government acts like a large firm selling various social and merit goods. The second major attraction of the benefit approach is that it brings Government expenditure into the picture, whereas most approaches to equity tend to regard the payment of tax as an isolated act.

A rigorous application of the benefit principle would require that there should be a simultaneous determination of the tax level and of the level of Government expenditure. In the pure theory⁹ tax liability is determined on the basis of how much the consumer could be induced to pay by an omniscient despot. The taxpayer's willingness to pay would be determined by his desire for the social good and by his income. Now the VAT does not require the consumer to reveal his preference for social goods, but it can be thought of as encompassing some of the elements of the benefit theory, if it is combined with Government expenditure of a certain kind.

If for example, the Government expenditure is concentrated in areas such as health, education and the provision of social security benefits, which

tend to give greater benefit (in utility terms) to the poor, then it may be argued that the lower income groups who spend the greatest proportion of their incomes on consumption and therefore sacrifice most to the VAT, also receive most of its benefit. This is consistent with the benefit approach.

4.7. ABILITY TO PAY:

Horizontal equity is probably the most widely accepted principle of equity in taxation. Henry Simons¹⁰ placed it above vertical equity in his later work. Musgrave on the other hand, argues that this is unjustified. He notes: "If there is no specified reason for discriminating among unequals, how can there be a reason for avoiding discrimination among equals?"¹¹. We shall take the view that both criteria are important and discuss the VAT in terms of each. In order to do this satisfactorily we shall need to define an index of equality.

4.8. THE INDEX OF EQUALITY:

Equality may be defined in terms of income or consumption. Essentially the choice is a value judgment. Historically those who have favoured progressive taxation have also favoured an index based

on income, but it is also possible for a tax on consumer expenditures to be applied at progressive rates. The main effective difference between the two is the treatment of saving. If the index is defined in terms of consumption then saving will be excluded, whereas if it is defined in terms of income, then saving will be included. Thus the old argument that income taxes involve a double taxation of saving really depends on the way the index of equality is defined. If the index is defined in terms of consumption, then a tax on income would subject savings to a double taxation. But if the index is defined in terms of income then the interest on saving is just another accretion and should rightfully be included in the base.

The VAT may be regarded as a general tax on consumption. If the index is defined in terms of consumption, then the tax is equitable from the point of view of horizontal equity. With respect to vertical equity the VAT is proportional in terms of the consumption index.

When related to the income base the VAT is somewhat less equitable. In terms of horizontal equity it is

still superior to the selective sales taxes, but contains an element of inequity in that families with similar incomes may have different consumption rates. This means that horizontal equity may be achieved more certainly through an income tax. The more usual objection to the VAT vis-a-vis income taxes is on vertical equity grounds. The regression occurs because consumption expenditure is usually a declining proportion of rising family income.

4.9. THE DEGREE OF PROGRESSION:

The arguments in favour of progression related to the income index of equality are based upon a utilitarian interpretation of ability to pay. Individuals are assumed to have identical utility curves for income which display diminishing marginal utility. This theory favours the Pigou-Edgeworth principle of equal marginal sacrifice in order to achieve the objective of the maximisation of the sum of individual utilities. The only utilitarian qualification of this principle was in terms of the trade off between equity and efficiency. However, far more fundamental qualifications regarding the utility concept have been added since then. Atkinson¹³ (page 388) has distinguished two main lines of criticism:-

1. That the minimum sacrifice theory takes no account of the possible disincentive effective of taxation.
2. That the underlying utilitarian framework is inadequate.

We shall consider these points in reverse order, beginning with some of the objections to the utility approach.

Firstly, the new welfare economics does not accept interpersonal utility comparisons. The reasoning is that since people have different tastes it would be easy, for example, to find two people who had the same income, yet one showed little desire for more money while the other would incur great risk or discomfort to earn more. Evidently the two people have different marginal utilities of income. Secondly, there is Arrow's¹⁴ very interesting impossibility theorem (page 130) which questions the principle of collective rationality. He uses an example first noted by the Marquis de Condorset which illustrates a situation in which there is no transitivity of choice: "There are three alternatives X, Y and Z among which choice is to be made. One third of the voters prefer X to Y and Y to Z. One third prefer Y to Z and Z to X and one third prefer Z to X and X to Y. Then X will be preferred to Y by a majority, Y to Z by a majority

and Z to X by a majority." Clearly, lack of transitivity of choice would invalidate the entire indifference curve analysis. The question of the influence of taxation on the work leisure choice has come back into vogue following the work by Mirrlees (1971)¹⁵ but it had already been clearly recognised by Sidgwick (quoted in Edgeworth)¹⁶ who wrote: "It is conceivable that a greater equality in the distribution of produce would lead ultimately to a reduction in the total amount to be distributed in consequence of a general preference of leisure to the results of labour". Nevertheless, the works of Mirrlees have drawn attention again to the fact that the introduction of the work leisure choice greatly complicates the solution. Although he has not been able to derive an optimal tax structure, he has developed some unexpected conclusions. For instance it may be optimal for some of the population to remain idle and "marginal tax rates are rather low and tend to fall rather than rise with the level of income,"¹⁷. Thus the optimal tax structure may in fact be far less progressive than it would seem to be superficially.

4.10. CONCLUSIONS:

It is possible to provide theoretical justification for the VAT in terms of the trade-off between equity and efficiency. One may adopt the approach that

the VAT's advantages of neutrality and horizontal equity outweigh whatever loss there may be in terms of vertical equity. Yet it is important to note that deeper analysis reveals situations in which these assumptions may not hold. Questions of efficiency are complicated by the existence of multiple choice and decisions regarding equity are basically subjective value judgments. Furthermore, the tax cannot be viewed in isolation from the use to which the money is put.

In the view of the author the VAT would indeed be justifiable in South Africa on condition that the base were so constituted as to be as neutral and horizontally equitable as is feasible and on condition that the requisite benefit expenditure were undertaken to offset a certain amount of regression. However, the author recognises that his view must in the end be based on certain subjective attitudes to the relative importance of efficiency and horizontal and vertical equity, which may not be shared by the community.

REFERENCES - EQUITY/EFFICIENCY:

1. HICKS J.R. (1939), Value and Capital, Oxford University Press.
2. MORAG, A. (1959) "Is the Economic Efficiency of Taxation Important", Econ. Journal. Vol. 69, No. 273, pp. 87-94.
3. FRIEDMANN, M. (1952), "The Welfare Effects of an Income and Excise Tax". J. Polit, Econ. Vol. 60, No. L. pp. 1-24.
4. LITTLE, I.M.D. (1951) "Direct versus indirect taxes". Econ. J., Vol. 61 No. 243 pp. 577-84.
5. SADIE, J.L. (1970) "Die Toegevoede-WAARDE BELASTING", South African Journal Econ. Vol. 38, 1970.
6. Quoted in SULLIVAN C.K. (1965). The Tax on Value Added, Columbia University Press, P.151.
7. SIMONS, H.C. (1938) "The Case for Progressive Taxation", Quoted in Houghton (ed) "Public Finance" Penguin P.18.
8. ROYAL COMMISSION ON TAXATION (CANADA), "A Proposal for Taxation Reform", in Houghton (ed) P.143 ibid.

9. See for instance LINDAHL E. (1919) "Just Taxation: A just solution" pp. 168-76 in R.A. MUSGRAVE and A.T. PEACOCK (eds) Classics in the Theory of Public Firms, MACMILLAN 1958.
10. SIMONS H.C. quoted in Musgrave (1959) op cit P.160
11. MUSGRAVE R.A. (1959) op cit P.160.
12. Ibid P.162.
13. ATKINSON A.B. "How Progressive should income tax be" in E.S. Phelps (ed) Economic Justice, Penguin 1973, P.355.
14. ARROW K.J. (1967) "Values and Collective Decision Making", in Phelps (ed) 1973 Op.cit P.130.
15. MIRRLEES J.A. (1971) "An Exploration in the Theory of Optimum Income Taxation". Rev. Econ. Stud. April pp. 175-208
16. EDGEWORTH F.Y. (1925) "Papers Relating to Political Economy" Vol. 2. Royal Economic Society P.104.
17. MURRLEES J.A. (1971) op cit P.208.

CHAPTER 5.

SHIFTING AND INCIDENCE

5.1. FORMAL AND EFFECTIVE INCIDENCE:

The discussion thus far has assumed that the VAT is shifted forward to the consumer through a rise in the prices of consumption goods. Therefore, although the formal incidence (using Hick's¹ terminology) is upon the business firms who actually pay the tax, the effective incidence is upon the consumer and the VAT may be regarded as a general tax on consumption. This assumption is in accordance with conventional academic opinion although there are those such as Ture (1972)² who feel that the tax is more likely to be shifted back to the factors of production. Tait (1972)³ makes the point that shifting in a macro economic sense can become so diffuse as to be almost meaningless. "If the prices of consumer goods rise, consumer incomes rise sufficiently to maintain their previous real consumption, then the shifting of the tax starts to depend on things like the unused resources in the economy, the money supply, trade union power etc,".

"In general, it is almost impossible to isolate the effects of a given tax change. In the theoretical world, so many other variables must be taken into

account, e.g. the use to which Government revenue is put, the degree of money illusion, other relative price changes and Government monetary policy (Due 1963)⁴. The real world is even more complicated, containing variables and relationships between those variables which are only approximated by theory.

In spite of the difficulty of determining the ultimate incidence of the tax, there is a strong consensus that at least partially, the general sales tax is shifted forward.

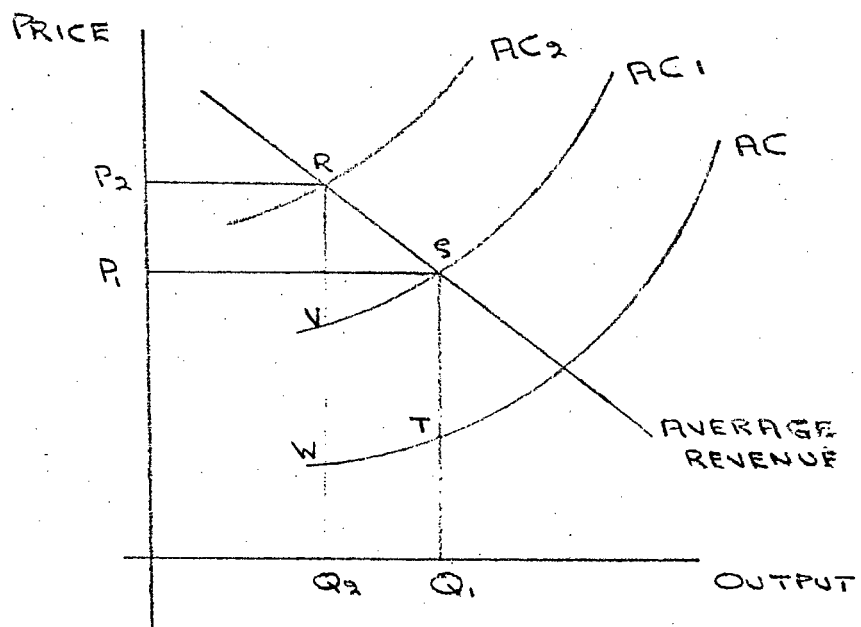
5.2. THE SHIFTING MECHANISM:

The shifting of the sales tax onto price is supposed to operate by increasing the marginal costs of the firm. This makes some production unprofitable at current prices and output is reduced. By reducing output the entrepreneur frees resources for Government use but the demand curve for consumer goods is meant to remain the same. With the reduced supply this leads to an increase in price (Sullivan, Page 261)⁵. The results are similar under imperfect competition where businessmen "with the use of average cost techniques are expected to raise prices by the amount of the tax". (Due, quoted in Sullivan)⁶.

5.3. PROFITS TAXES:

Traditional theory holds that in the short run a profits tax will not affect optimum output under conditions of monopoly or perfect competition, and there will be no shifting. Under perfect competition the firm is a price taker in the short run so no increase in price is possible. In the case of the monopolist, pretax equilibrium is undisturbed by the tax. This is because neither the marginal revenue nor marginal cost curves which are the determinants of profit maximising output and price are affected by the tax. The tax merely divides the profit between the Government and the firm.

However, this marginal cost approach to pricing has been received with some skepticism by businessmen who claim to set their prices on the "cost plus" system. If the "cost plus" system is used then the tax may be shifted as is shown in the diagram below.



AC is the average cost curve of the firm, AC1 includes the markup and AC2 includes the tax. After tax the firm increases its price so as to maintain the before tax markup such that $RV = VW = ST$. The result of this policy is that the incidence is shared by the consumer who pays a price of P_2 which is higher than P_1 and by the firm in reduced output from Q_1 to Q_2 . Clearly there will be even more shifting if businessmen adopt a "cost plus a percentage" approach to pricing.

5.4. THE EXTENT OF SHIFTING:

Given that shifting occurs in the case of a particular tax, the amount of the shift will depend on the elasticity of the various cost and revenue schedules. Clearly, in the case of a general sales tax, the greater the elasticity of demand, and the less the elasticity of supply, the less the firms will shift the tax onto the consumer. Conversely a less elastic demand and more elastic supply will give rise to greater shifting.

In South Africa the VAT would replace a selective sales tax. Because of the wider base, demand would be less effected by the availability of substitutes and consequently there should be greater shifting of the tax. To the extent that the VAT allows for

a reduction in profits taxes it may also give rise to further shifting. However, this is uncertain and will remain so until we are able to determine the extent to which profits taxes are passed on in South Africa.

5.5. EMPIRICAL STUDIES:

Most of the empirical studies have tended to confirm the argument that there is some forward shifting of the VAT. However, there have been different results regarding the nature and extent of the incidence. Bronfenbrenner (1960)⁷ for example has argued that shifting under the VAT is slower than for other sales taxes. In Europe there has usually been some rise in prices following the introduction of the VAT but it is difficult to isolate that part of the price rise which is due to the shifting of the tax. In Denmark and the Netherlands, there were sharp price increases which were definitely attributed to the introduction of the VAT (N.E.D.O. Report 1969)⁵. The Germans on the other hand, experienced no noticeable price rise at all. The overall price increase of 0,9% in the six months to July 1968, after the introduction of VAT, is believed to have been caused by other factors and the effect of the VAT may actually have been a price [↓] because it replaced the

cascade tax. This serves to highlight the fact that shifting and incidence are relative as well as absolute phenomena. Relative to the cascade taxes which it replaced in Germany the VAT seems to have shown less shifting. The price impact is likely to be greatest in countries where the VAT is part of a complete change over from direct and indirect taxes which would not of course be the case in South Africa which has already begun to move towards an indirect system.

The shifting of the profits taxes has come in for a lot of empirical examination recently, but there have been conflicting results and the controversy is still not resolved. Studies by Kryzniak & Musgrave⁹ (1963) and Laumas¹⁰ have tended to indicate extensive shifting of corporation taxes in America and India. On the other hand Gordon (1967)¹¹ has found evidence of zero shifting.

CONCLUSION:

The only firm conclusion that can be drawn about shifting and incidence for South Africa, is that the VAT is likely to be shifted more than the selective sales taxes. The marginal increase in regression which arises from the greater shifting must then be viewed in terms of the equity-efficiency trade off discussed in the previous chapter.

As regards the profits tax, some shifting is likely but empirical work overseas has yielded conflicting results and we cannot be sure whether there would be more shifting under the VAT or the Profits Tax.

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REFERENCES - SHIFTING:

1. HICKS J.K. (1946) "The Terminology of Tax Analysis",
Economic Journal Vol. 56 No. 221 p.p. 33-50.
2. TURE N.B. "Economics of the Value Added Tax"
American Enterprise Institute, Washington D.C. 1972
3. TAIT A.A. Value Added Tax McGraw Hill 1972 P.72.
4. DUE J.F. "Sales Taxation and the Consumer",
American Economic Review, Dec. 1963.
5. SULLIVAN C.J. The Tax on Value Added, Columbia
Univ. Press, 1965. P.263.
6. DUE J.F. Quoted in Sullivan, ibid P.264.
7. BRONFENBRENNER M. The Japanese Value Added Sales
Tax, National Tax Journal, Dec. 1950 pp. 298-313.
8. N.E.D.O. (1969) op cit. P.40.
9. KRYZNIAK M & MUSGRAVE R.A. The Shifting of the
Corporation Income Tax, Baltimore 1963.
10. LAUMAS G.S. The Shifting of Corporation Income
Tax: A study with reference to Indian Corporations,
Pub. Finance Vol. 21 , No.4.1966, P.462-72.

11. GORDON R.J. "The Incidence of Corporation Tax",
American Econ. Review Vol. 57 No.4, 1967
p.p. 731-58.

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CHAPTER 6.

STABILIZATION

CONSUMPTION ASPECTS

6.1. VAT AND OTHER SALES TAXES:

The essential weakness of the selective sales tax (currently operating in South Africa) as a means of regulating overall demand in the economy, is that its action may be offset by substitution. Thus an increase in the tax will not necessarily lead to a decline in total consumption in real terms, yet it will discriminate heavily against certain industries. The VAT, being a general sales tax, is neutral between commodities leaving only the choice between present and future consumption.

If people decide to save more as a result of a tax increase this will reduce aggregate demand thus achieving the objective of the tax increase. Conversely a tax cut should increase aggregate demand. Of course this neutrality would apply to any general sales tax and is not unique to the VAT.

Another advantage of the VAT as a discretionary tool is the speed of reaction. The immediate impact of any

adjustment will be far wider than it would be under any other sales tax because of the broader VAT base.

The VAT would also be a more powerful control weapon than existing South African sales taxes because of the wide effect on company liquidity. Taxes have to be paid as they are accrued although they may not yet have been realised because the trade credit period may be longer than the lag in tax payments. Consequently any changes in rates would have an immediate effect on company liquidity. Of course the maximum benefit from the utilisation of this relationship will only be derived through the close co-ordination of monetary and fiscal policy.

6.2. INDIRECT VS. DIRECT TAXES:

The relative efficiencies of the direct and indirect taxes as fiscal weapons will be carried out via a comparison of the "tax multipliers". Assuming, for simplicity, a closed economy without indirect taxes or transfers, fixed government spending, and with a consumption function (C) of the form

$$C = a + c (Y - T_y)$$

where a is an arbitrary constant, C is the marginal propensity to consume, Y is national income and T_y is tax revenue.

Now given the equilibrium condition

$$Y = C + I + G$$

it may be shown that

$$\frac{\Delta Y}{\Delta T_y} = \frac{-c}{1-c}$$

which is the "Income-tax Multiplier".¹

The "Rate-of-Tax Multiplier" at a uniform proportional rate may be shown to be smaller than the above multiplier and the multiplier for a progressive rate may be shown to be yet smaller². The implication is that progressive taxes would be the most effective automatic stabilisers among the direct taxes and conversely the weakest discretionary weapon.

The "Indirect Tax Multiplier" for a proportional consumption function is

$$C = cY$$

$$\Delta y / \Delta T = -1 / 1-c \quad (3)$$

This multiplier is larger than the income tax multiplier on page 77 and may be interpreted to mean that indirect tax adjustments would be better discretionary tools than direct taxes.

However, a consumption function of the form

$$C = a + cY$$

may yield a different result. If the autonomous element refers to a given quantity of goods, its value will rise with the price increase brought about by the increased indirect taxation. The new multiplier would depend on the value of a . If a is very large this could tend to neutralise the effect of a tax change on consumption.

The most recent formulation of the consumption function for South Africa was published by Van Rensburg in 1973⁴. The relationship he found was:

$$C = -0,0031 + 0,88 Yd.$$

The autonomous element in this function is small, which means that its potentially neutralising effect is minimised. This implies that indirect taxes should be good regulators in the South African economy.

INVESTMENT ASPECTS

6.3. AN INVESTMENT FUNCTION:

The theory of investment is highly controversial. A number of investment functions have been put forward but none have been found to be entirely satisfactory. The author has performed a simple correlation analysis between changes in absolute disposable income and private investment in South Africa from 1946 to 1970.

The purpose was to test whether there was any simple relationship of the marginal propensity type found for consumption and disposable income by Van Rensburg. The results of the test are presented here, while the data and calculations may be found in Appendix I.

The sample correlation coefficient was $r = 0,51530$ and the coefficient of determination $r^2 = 0,26319$

Thus the association in the sample seemed rather low and the use of the Z transform yield a value of 0,1244 well below the 1,96 which is the critical value at a 5% significance level where Z is normally distributed, tending to confirm the lack of correlation in the variables. This lack of a significant correlation

implies that whatever functional relationship does exist, must be of a more subtle nature.

We shall not perform similar tests on all of the other variables which may determine investment. Yet clearly we need some sort of a general model which incorporates at least the more important factors such as profits, rate of interest, capital stocks and expectations. Let us begin then with the general principle that where funds are available they should be invested only if the present value (P.V.) of the return discounted by the cost of capital to the investor exceeds the P.V. of the outlay.

6.4. AN INVESTMENT MODEL:

Where the investors are certain of costs and returns the simple marginal efficiency type investment function is adequate. Thus we may say that a time stream of capital costs $C_1 \dots C_2 \dots C_t$ over t years yielding a revenue stream $A_1 \dots A_2 \dots A_n$ over n years has a net present value (N.P.V.).

$$\text{N.P.V.} = \sum_{i=1}^n \frac{A_i}{(1+r)^i} - \sum_{j=1}^t \frac{C_j}{(1+r)^j}$$

and investment will be undertaken where the N.P.V.

is positive. The value of r in the formula reflects the costs of capital and will be related to the market rate of interest. The values of A will depend on profits and the allowances for depreciation accepted by the Receiver of Revenue.

The application of a VAT to this simplified model yields interesting results. In as much as VAT collections are effected quarterly as against yearly profits tax collections, the reduction in cash flow due to an increase in the VAT would occur at an earlier point in the series than for profits tax and would thus be more heavily discounted. The earlier impact on liquidity would also react upon the rate of interest leading to a higher cost of capital for discounting. Thus the profit and liquidity effects of a VAT on investment would make it a speedy regulator which is consistent with the earlier conclusion regarding consumption effects. However, cash flows are made up of depreciation as well as profits and the instantaneous depreciation allowed under the VAT has potentially destabilising effects on investment.

Consider an increase in the rate of VAT for stabilisation reasons. One way in which investors could

maintain their cash flows would be simply to increase their depreciation allowances by embarking on new investment.

If the VAT were to become a regular cyclical dampener sophisticated investors would recognise the temporariness of high rates and would take advantage of depreciation allowances at precisely the time when the authorities are trying to cut back on investment. We are presented thus with the spectre of investment not only failing to respond to treatment but wilfully doing its own thing and at any moment it may just break off into the wild blue yonder.

All is not lost. There are two potential forces to counter this counter effect. Firstly, assuming that investors do take advantage of temporarily high rates of tax to invest, this will place a further strain on liquidity in the economy and eventually firms will be faced with capital rationing. Furthermore restrictive Fiscal Policy is likely to be tied to a tighter Monetary Policy which will serve to reinforce this effect. Secondly, a policy of increased investment in the face of higher tax rates would assume that market elasticities are such as to absorb the price increase, as well as the increased

output.

Overall market demand is unlikely to be perfectly inelastic, however, and consequently there should be some fall off in demand with the increase in prices. This will serve as a disincentive to invest.

6.5. INSTANTANEOUS DEPRECIATION:

Our discussion of the potentially destabilising effect of the VAT for investment has assumed that an immediate cash refund is allowed. The German and Dutch systems do in fact work this way (for credits in excess of a certain minimum limit) but the Italian and French operate buffer systems which complicate the issue⁵. The French "Decalage" introduces a one month lagged effect and the lag in the "Butoir" is of uncertain period⁶. We shall continue with our assumption, however, as it is proposed that the South African system should be similar to those of Germany and Holland permitting instantaneous depreciation because of the neutrality advantage.

The essence of the neutrality condition is that investments which have the same internal rate of discount before the tax should also have the same internal rate after the tax. This means that the

effect of tax rate will be identical for different investments where the internal rates are reduced by the same fraction. It may be shown by recourse to worked examples (the problem does not lend itself to simple mathematical solution), that a system allowing for instantaneous depreciation satisfies this condition⁷.

6.6. COSTS AND RETURNS ARE UNCERTAIN:

The standard method according to which investment criteria are modified to take account of uncertainty is the introduction of some stringency into the condition for acceptance. For example the M.P.V. technique used above, may be adjusted by the addition of a risk premium to the cost of capital used in the discounting process. Examination of the underlying formula shows that this accounts for uncertainty in the return but not in the outlay. Consider the formula

$$P = A (1 + r)^{-t}$$

where P = present value

A = cash return

r = discount rate per period

t = number of periods

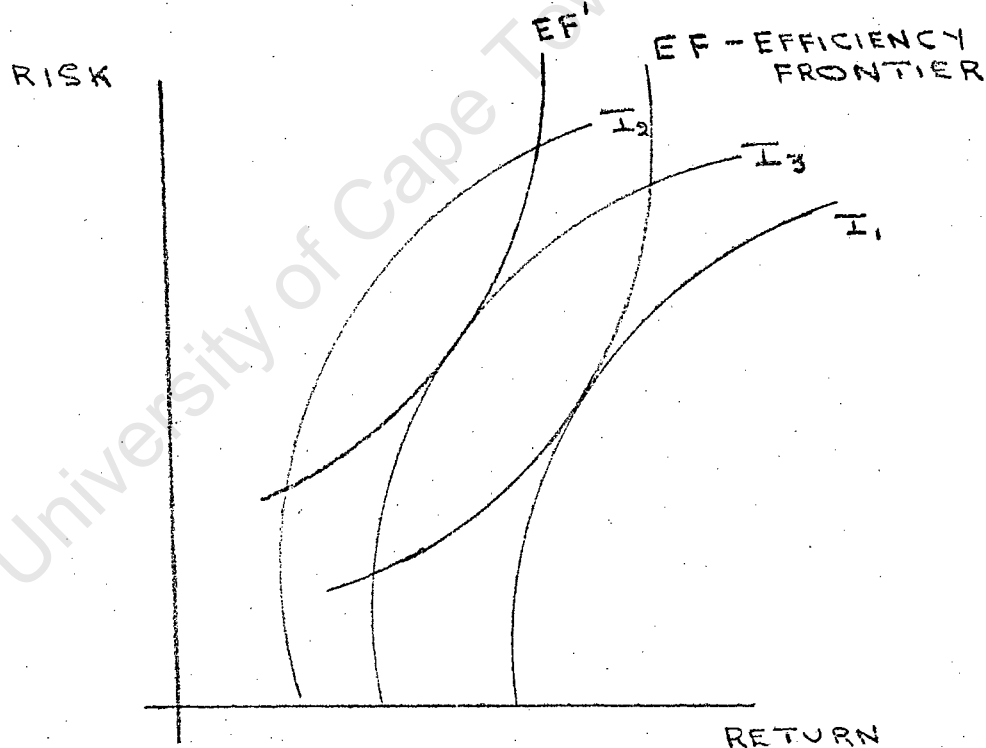
Now if the uncertainty is in respect of the outlay when the outlay is incurred before the return as is often the case, then $t = 0$. Clearly adjustments in the discount rate will not alter the value of P in this case.

This problem is overcome by the use of certainty equivalents which discount the expected cash flows at the cost of capital rate and then convert the N.P.V. to a certainty equivalent.

Both the risk premium and certainty equivalent techniques assume risk aversion among investors. Where the risk premium approach is used there is the problem of deciding just how risk averse investors are, for this will determine the added discount they deem necessary to account for the uncertainty. If on the other hand, the certainty equivalent technique is employed, the market rate of interest may be used for discounting but again one needs to know how the investor will effect the trade off between risk and return when converting the resultant N.P.V. to its certainty equivalent value. This problem is conveniently handled by the time honoured economic technique of assumption. We shall assume

that investors are risk averse, and show their correspondingly "concave down" type indifference curves. The Markowitz⁸ analysis for a full portfolio of investments which reduces to the same problem of a risk return trade-off is quite elegant looking and has become very popular in investment literature lately so this diagram will be used for illustration.

FIGURE 1:



The efficiency frontier represents the optimum set of combinations of risk and return. Clearly any

combination which is not on the lower right quadrant of the set of available combinations is sub-optimal as a shift to the right would increase return while leaving risk unaltered. Similarly a shift downwards would decrease risk while leaving return unchanged. The shape of the indifference curves I_1 and I_2 follows upon the assumption of diminishing marginal utility and optimal investment occurs at the point of tangency of the highest indifference curve with the efficiency frontier.

The introduction of a tax will shift the efficiency frontier to the left since for the same amount of risk there will be correspondingly lower returns. The initial drop from curve I_1 to I_2 is unlikely to represent a final position since the investor may attain the higher indifference curve I_3 by moving along the new efficiency frontier EF' . What we have here is an income - substitution effect similar to that which occurs in the Leisure -Income trade off. It seems that instead of a total substitution of less risk for less income the investor would want to recover some of the past income by assuming more risk. Whether the income or substitution effect is greater is indeterminate. A further complication arises if the tax increases uncertainty per se. For example an increased VAT may make an investor more

uncertain of the ability of the market to absorb increased output because of his expectation of a slow down in the economy. This would shift the indifference curve further to the left reinforcing the substitution effect. If this is powerful enough there will be no net income effect at all.

Now as long as there is no net income effect, investment may be said to be well behaved since an increase in tax will lead to a decrease in investment, thereby facilitating our control of the economy. However, a noticeable income effect would mean that investment was just as badly behaved in the face of uncertainty as it was found to be where investors take advantage of the credit mechanism to increase investment upon an increase in taxes.

6.7. THE TREATMENT OF INTEREST COST:

The tax treatment of interest cost also has a bearing upon the willingness of investors to assume risk. In South Africa interest cost may be deducted in determining net income for tax purposes. This makes debt financing more attractive vis-a-vis equity financing. We shall not state that the optimal capital structure is altered since that would draw

us into the Modigliani-Miller controversy but we shall assume that this tends to increase the share (however marginally) of debt in the capital structure. Banks are known to be reticent about granting credit for risky ventures and the implication is that this increased use of debt on the part of investors leads to the rejection of more risky projects.

The VAT, however, appears to be neutral with respect to capital structures as there is no offset of interest cost. Thus the VAT would favour neither debt nor equity. If there is an all or nothing choice between VAT and the profits tax the VAT should be the system more favourable to risk taking. The proposed system for South Africa would not eliminate profits taxes, however, with the result that this bias towards risk aversion is likely to remain.

6.8. THE MODEL IN THE ABSENCE OF RISK AVERSION:

Thus far it has been assumed that investors are averse to risk taking. This assumption enabled us to develop indifference curves from the the inferences regarding substitution and income effects were drawn. However, if people were not risk averse

the indifference curves would not bend to the right and there would be no substitution effect. In this case investment would be all the more likely to be badly behaved and the response to a tax increase would be one of increased investment from the income effect. Let us therefore examine the assumption of diminishing marginal utility upon which the belief in risk aversion stands.

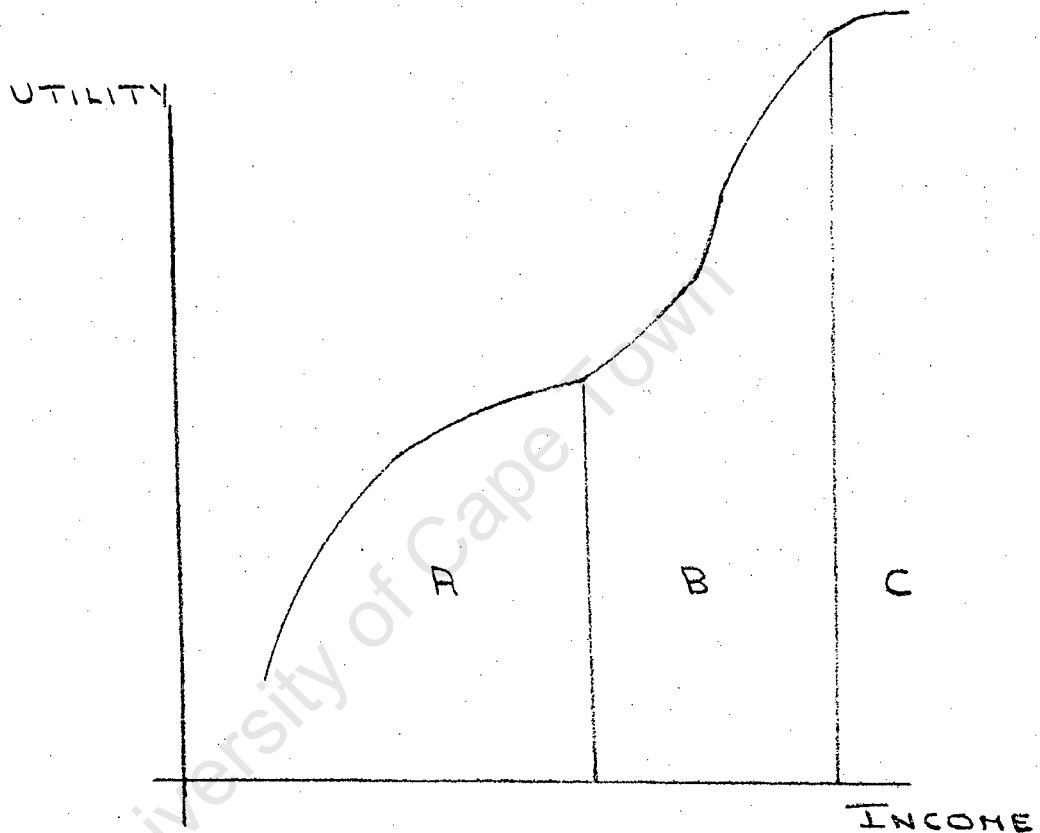
Friedman⁹ has developed a function $G(B)$ which gives the "utility" of various probability distributions of income. (Where B stands for a "bundle" of alternative incomes and associated probabilities). In its general form the theory depends only a supposed consistency and transitivity of choice. Even these assumptions will be questioned later, but for the moment they will be accepted. The theory is given further content with the delimitation of a special hypothesis.

$$G(B) = \sum P F(I)$$

Where P represents the probabilities of various incomes and $F(I)$ is the function of income. He then draws an $F(I)$ function to be "capable of accounting for most of the observed phenomena". The function appears in

figure 2.

FIGURE 2:



Region B is the one of particular interest to us for it shows a zone in which there is risk taking. The existence of this region is said to account for the phenomenon of gambling, where people may prefer the small chance of a large win to the large chance of a small loss. There is no sure way of saying whether investors will be in a region A, B or C at the time

when the tax is imposed and clearly, therefore, it is never certain whether investors will react by risk aversion or by risk taking in a given situation.

The very fundamentals of utility theory have been questioned by Rivett¹⁰ who questions both the consistency of choice and the transitivity axiom (Von Neumann and Morganstern's second axiom). This criticism goes far deeper than a mere questioning of our ability to control investment. It is in fact a questioning of the rationality of choice and of our ability to control it via stabilisation policy or for that matter any other policy. While the question is interesting and serves to highlight the inter-disciplinary nature of profound economic thought, it will be developed no further since this thesis must limit itself to a fairly specific analysis of the implications of the VAT.

6.9. CONCLUSIONS REGARDING CONSUMPTION AND INVESTMENT:

The conclusion which begins to emerge from the preceeding discussion is that the VAT would be far less reliable in its effects on investment than its effects on consumption. The existence of an income

effect would imply that taxation would increase rather than reduce the level of investment in the economy. In the specific case of the VAT this effect would be intensified by the operation of the credit mechanism. However, these results are subject to a number of major qualifications. Firstly, the available theories of investment are inadequate because they break down under uncertainty, yielding indeterminacies. Then the existence of an income effect may be called into question where decision taking in joint stock companies is divorced from ownership. Here risk aversion could be a prime motive since shareholders can easily spot the failures among directors' investment commitments but are unable to assess the opportunity cost of projects which were refused.

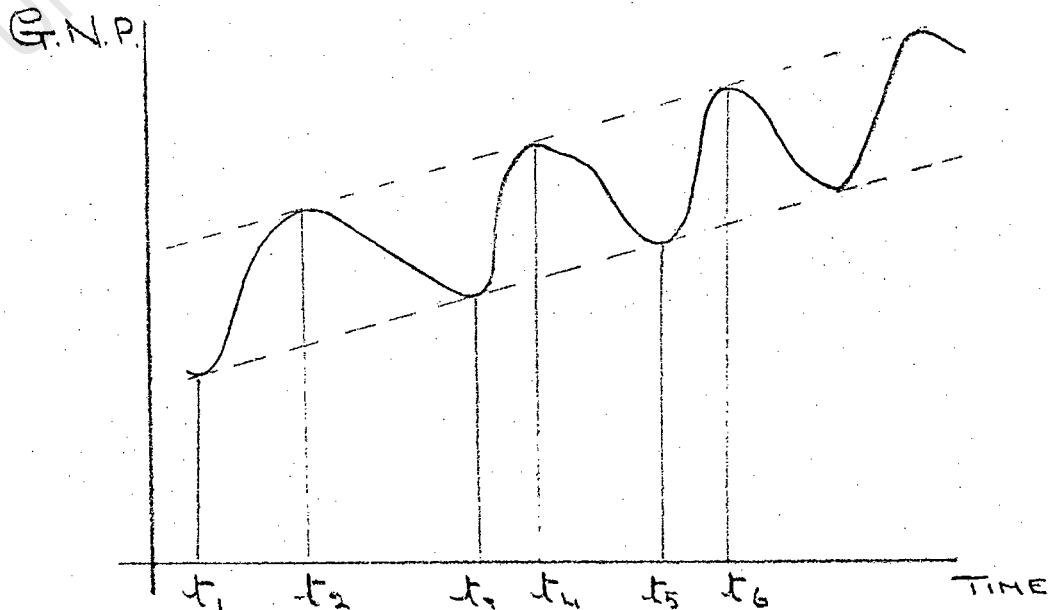
Finally, if liquidity and the availability of funds are important determinants of investment the above conclusions would be neutralised. Only the impact value of the VAT which would apply more to consumption and liquidity owing to the longer "gestation" period of investment decisions may be said to have a high probability of being "well behaved", the medium and long term effects are uncertain. When we begin to separate the impact value of discretionary policy from its wider ramifications we are introducing a time dimension into the analyses. This dynamic

approach is at once more realistic and more difficult than the static framework we have relied on thus far. The next section discusses the feasibility of extending our earlier results to develop dynamic conclusions.

DYNAMIC ASPECTS

6.10. TIME PATHS AND THE PROBLEM OF LAGS:

The essential element in a dynamic study is time. The time path drawn out by the economy as it moves from one equilibrium to another must be understood before it is possible to predict the outcome of an adjustment in any exogenous variable. This point is illustrated in the phase diagram which appears below.



Suppose that GNP is fluctuating as depicted in the diagram. Odd values $t_1, t_3, t_5 \dots t_{2n+1}$ represent the troughs and even values $t_2, t_4 \dots t_{2n}$ represent the peaks. A policy designed to curb the upswing between t_1 and t_2 would need to take effect before t_2 or it would accentuate the downswing between t_2 and t_3 causing a more violent oscillation than that which would have occurred if the system had simply been left to itself. In order to minimise the danger of instability from this source it is necessary to cut down as much as possible on the lags inherent in the system.

LAG TYPE 1:

RECOGNITION OF THE NEED FOR STABILISATION MEASURES:

Forecasting errors and the time taken to assemble and process data may give rise to diagnoses which are both untimely and wrong. The VAT could serve as a means of improving the quality of statistical data. Until now South African experience has shown that the many statistical indicators needed to pinpoint shifts in the movement of the economy take rather long to be published when they are available. In addition, none of the indicators, with the possible exception of the stock market, seem to provide reliable early warning of turning

points in booms and depressions. Even the stock market shows an uncertain trend as there is seldom a way of discerning early on whether a reversal represents a "technical correction" in an otherwise secular trend, or whether it is the next phase of the Business Cycle of which the trend was only a part.

LAG TYPE 2:

DECISION TIME:

Once the analyst has recognised the need for action, there is a further time lag in getting the authorities to agree on a policy. The VAT may be of some help in decreasing this lag since it is a truly general tax. In most countries, probably including South Africa, there are "lobbies" of vested interests close to the seat of power. When a tax change is proposed which may be detrimental to various groups, much time may be wasted in pacifying and perhaps arranging compromises with the offended groups. In the case of a general tax this is less likely to happen as all are affected equally. This smaller decision lag is also an advantage of using tax adjustments rather than adjustments in expenditure.

Large expenditure programs such as the Orange River projects and Saldanha Bay need to be planned well in advance and even smaller projects such as the building of a National Monument cannot be started and stopped at will.

LAG TYPE 3:

TIME LAG IN TAKING EFFECT:

It has already been pointed out that the VAT has a very speedy reaction time because of its broad base and because collections occur at periods of less than a year. This would be an advantage in cutting down the lag between the adjustment and change in disposable income but it would do nothing about the lag between the receipt of income by the consumer spending and production undertaken to meet consumer spending (the Lundberg lag)¹¹.

Although the VAT has the impact advantage, its total effect after working through the successive multiplier rounds is far less certain, especially in view of the possibly perverse effect of the export and investment mechanisms.

The problem of lags has been tackled basically in two ways. Firstly, there have been attempts to build econometric models which would incorporate

the lags and enable the policy maker to simulate the overall effect of any intended fiscal measure. These models have proved difficult to build because of the vast number of variables involved. Not only do the lags need to be identified and measured but the relationships between all the variables need to be specified as well.

In defining the structure of the economic system, the question of causality has been particularly difficult to settle. Relationships between variables established from historical data may be transitory or even accidental.

Even if we accept that two variables A and B are related, this does not necessarily mean that a change in A causes a change in B because there may be a third variable and which is the real cause of the change in B, yet C may not have been accounted for in the model. Uncertainty in regard to causality makes it very difficult to build models which accurately describe the relationships between past events, let alone models which are able to predict the future. Nevertheless models have been built on which fairly useful simulations have been performed. Perhaps the most powerful and general result of these simulations has been the discovery that for long period models the lags tend to be relatively unimportant. Hansen¹² mentions eight studies which

support this view.

Simulations on the Brookings Institute model, the Federal Reserve - MIT model and the Klein - Goldberger model for the United States showed that between 70 and 100 percent of the effects of discretionary measures appear during the year after the change¹³.

The Dutch model built by the Central Plan Bureau of the Netherlands also gave a high proportion of the effects appearing during the first year. Simulations for the United Kingdom implied that about 90% of the effect of a change in taxation or government expenditure appeared during the year after the change¹⁴.

If this result turns out to be capable of generalisation then we have a useful bound on the likely period of lag type III. However, it may not always be feasible to enact the discretionary measures as long as a year before the peak in the cycle which we propose to control. Furthermore, we still have to contend with lags of type 1 and type 2. These factors alone would be sufficient to suggest the using of automatic stabilizers but there is another possibly more serious difficulty. The simulations assume that the economy starts off in a state of equilibrium and the moves dynamically towards another

state of equilibrium. The real world may not be that obliging and at the moment when the shock (tax) is applied to the system it may be at a point on its dynamic path which the econometrist finds impossible to locate on his model. Let us consider then the second method of overcoming the problem of lags, which is to build automatic stabilizers into the system.

6.11. AUTOMATIC STABILIZERS:

Certain taxes, such as the progressive personal taxes rise and fall with income and so provide automatic damping to the cycle. From the previous section the advantages of such dampeners in eliminating lags are clearly evident. Let us consider, therefore, the potential of the VAT as one of these automatic stabilizers.

On purely theoretical grounds the efficiency of the VAT as an automatic stabilizer would depend on which taxes it replaced, and upon the assumptions regarding shifting. In South Africa, where it is likely to replace the selective sales taxes, it should prove to be a more efficient stabilizer because of its very wide base. With a widely based tax a given

increase in national income would give rise to a greater increase in tax revenue, and a correspondingly smaller increase in disposable income than that which would occur where there was a narrower base.

If on the other hand the VAT were to replace the profits taxes (wholly or partly) its automatic effects would be less certain. Eckstein¹⁵ has argued that VAT would be a weaker automatic stabilizer than the corporate income tax, since profits are more sensitive to a cyclical change than value added. However, Oakland¹⁶ has argued that this would depend on how the taxes are shifted. Among the possible situations which he suggests is the case where VAT is shifted and the economy is at full employment. He argues that this could be a situation in which the VAT would give greater stability than the corporate profits tax.

Besides the logical developments, there have also been many empirical attempts to measure the efficiency of the automatic stabilizers. We shall refer to some of the results of this work in the next section, but first let us consider the methods which have been used to do these measurements. Many of the static methods for measuring the efficiency of the stabilizers

have been based on the Musgrave¹⁷ coefficient.

This coefficient (r) gives the proportion of the change in income that is prevented by the operation of the built in stabilizers. It is defined as:

$$T = \frac{c E_t (T_o/Y_o)}{1 - c (1 - E_t (T_o/Y_o))}$$

where c = Marginal propensity to consume, E_t is the elasticity of the stabilizer with respect to changes in national income and (Y_o/T_o) is the average tax yield in the initial period. The advantage of this formulation stems from the fact that the product $E_t (T_o/Y_o)$ is equal to the effective marginal tax rate AT/AY and, therefore, the coefficient may be estimated without first calculating the elasticity or average tax.

However, an adjustment must be made for the effects of discretionary fiscal policy or the coefficient is likely to be over or underestimated. Modifications of this coefficient have been used in a number of researches including the measurement of automatic stabilisation quoted in section 6.12 below. Now it may be considered a serious deficiency to use a

static measure because although lags of type 1 and type 2 should not occur in the case of automatic stabilizers, this would assume that the type 3 lags are as short as the period of the model. In fact empirical work¹⁸ has shown this to be a fairly reasonable assumption and it will be accepted in this work. However, there are other shortcomings of static analysis which have stimulated work on dynamic measurement models¹⁹.

Briefly, these are as follows :-

Firstly static analysis compares equilibrium situations which may not exist once time enters the analysis. Secondly, static analysis takes no account of the speed nor the actual path of the adjustment in income which is induced by the stabilizer. These problems have to some extent been overcome in the sophisticated model built recently by Balopoulos²⁰ for the British economy. Like the static models it depends partly on the elasticity of various taxes with respect of National Income but it also depends on long and short run dynamic multipliers. The smaller the multiplier, the greater the automatic stabilizing power of the tax. Although we shall

have to be content with static measures of the VAT for the time being, we have here a glimpse of the direction of future research in the area. Now that Britain is on the VAT it is quite likely that simulations for the VAT will be performed on this model in the near future.

6.12. EUROPEAN EXPERIENCE OF VAT AS A STABILIZER:

The Europa Institute Study²¹ is particularly useful as a measure of discretionary effects of the VAT since most measurement models do not go so far as to isolate VAT from the other indirect effects. The effects on Prices, Consumption, Overall Demand, Production and Employment are shown in the tables in Appendix II. The VAT effect is isolated in the first of each of the three columns, in Tables 5, 7, 8, 9 and 10 of the study (Appendix II).

There is a downward response to an increased tax for all of the indices except prices of consumer goods, (Tableau 7) which vary positively with the tax as would be expected. The building industry is something of a non-conformist in the tables, but not enough to upset the overall result.

After our earlier discussion of the potentially destabilizing elements in the VAT, this "good behaviour"

is reassuring, but it should be remembered that the simulations were carried out within the limits of a basically historical model. The investment aberration which we are afraid of would be more likely to occur in the future when businessmen have come to understand the VAT well enough to take advantage of its peculiarities.

The OECD²² report gives the following comparison:-

STABILIZATION OF GNP-GROWTH AROUND THE TREND

Percentage Dampening Accomplished

COUNTRY	PERIOD	General Government Including Public Enterprise Investment			Central Government Including Public Enterprise Investment		
		Total	Discre- tionary Measures	Auto- matic Effects	Total	Discre- tionary Measures	Auto- matic Effects
Belgium	1955-65	31	-	-	21	5	16
France ¹	1958-65	12	-	-	13	-35	48
Germany ²	1955-65	35	-	-	23	-	-
Germany ²	1958-65	42	15	27	26	14	12
Italy ³	1955-65	31	-	-	16	-	-
Italy ³	1956-65	30	-	-	15	-17	32
Sweden ⁴	1955-65	31	14	17	-	5	-
Britain ⁴	1955-65	-11	-	-	-13	-10	-3
U.S.A. ⁴	1955-65	56	-	-	49	17	32

1. Measured on non-agricultural GNP at market prices.
2. Not including public enterprise investment.
3. Measured on non-agricultural GDP at factor cost.
4. Social security included in Central government.

A value of 100 has been assigned to perfect stabilization, 0 where there is no stabilization, and negative values where the effects are destabilizing. It is noticeable that among the countries compared, France has shown by far the greatest degree of automatic stabilization. So much so that the effects of strongly destabilizing discretionary measures have been offset sufficiently to produce a stabilizing overall effect. Now how much of this automatic effect can be attributed to the V.A.T.? This depends on the marginal response rates and elasticities of the tax and social security systems. The elasticities of tax revenue were found to be high ²³ for both direct and indirect taxes. However, the OECD were not able to obtain the estimates of discretionary changes in social security which were needed to derive the automatic changes. This is a pity, since the social security system would undoubtedly be a major contributor to automatic stabilization. Nevertheless, the high elasticity of indirect tax, of which V.A.T. is a large proportion, would indicate that the V.A.T. has indeed proved to be a good automatic stabilizer.

6.13 APPLICATION TO SOUTH AFRICA:

There are a number of reasons why the automatic stability of the French V.A.T. may not work as well for South Africa. Firstly, the low income elasticity commodities, alcohol and tobacco, which accounted for just under 10% of indirect tax revenue for France in the OECD study²⁴ play a far more important role in South Africa. In 1972/73 excises on these commodities made up more than 40% of South Africa's indirect tax collections.²⁵ If the Government were prepared to reduce the excises on these commodities when introducing the V.A.T. - and the V.A.T. would provide sufficient revenue for this to be possible, then the V.A.T. would increase the stabilizing potential of the indirect system. In the more likely event of the excises being retained, the V.A.T. would be less stabilizing than it is in France.

Secondly, the French V.A.T. extends to the service sector, but in South Africa this would probably not be the case, for some time, because of the administrative difficulties.

Another characteristic of the French V.A.T. which is unlikely to be adopted for administrative reasons, is the system of multiple rates, which again could be a factor in the high income elasticity of the tax.

Finally, the importance of social security in the French system should not be overlooked. In France the tax and social security systems complement each other as automatic stabilizers, whereas in South Africa the concept of social security is not yet very well developed.

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REFERENCES

1. Brooman F.S. : Macro Economics Ch. 9, Allen and Unwin, 1962.
2. Ibid.
3. Ibid.
4. VAN RENSBURG J. "Private Consumption Expenditure in South Africa 1947-1972," in S.A. Reserve Bank Quarterly Bulletin, Dec. 1973.
5. N.E.D.O. Report 1969, p.35. op cit.
6. "Fiscalite" op cit. 1971 p.77.
7. MUSGRAVE R.A.: (1959) op cit. pp. 338-344.
8. MARKOWITZ H.M. : Portfolio Selection, John Wiley, New York, 1959.
9. FRIEDMAN M. : Price Theory, Ch.4, Aldine, Chicago, 1968.
10. RIVETT P. : Principles of Model Building, p.82, Wiley & Sons 1972.

11. MUSGRAVE R.A. op cit p.504.
12. BENT HANSEN : Fiscal Policy in Seven Countries,
OECD Paris 1969, p. 35/36.
13. Ibid.
14. Ibid.
15. ECKSTEIN O. "European and U.S. Tax Structure".
The Role of Direct and Indirect Tax, National
Bureau of Economic Research and Brookings Institute,
Princeton University Press 1964, p.247.
16. OAKLAND W.H. : "Automatic Stabilisation and the Value
Added Tax" in Studies in Economic Stabilization,
Brookings Institution, Washington 1968.
17. MUSGRAVE R.A. op cit p.508/9.
18. HANSEN B. op cit p.35.
19. BROWN E.C. "The Static Theory of Automatic Fiscal
Stabilizers" Journal of Political Economy October 1955.
20. BALAPOULUS E.T. " Fiscal Policy Models of the British
Economy" Amsterdam 1967.

21. Collection Etudes: Serie Concurrence - rapprochement des legislation no. 16 Bruxelles 1970.
22. HANSEN B. op cit p.69.
23. Ibid. p.182/184.
24. Ibid. p. 192.
25. Statistical Survey in connection with the Budget Speech 1973/4. Pretoria, p.34.

CHAPTER 7.

ADMINISTRATION.

7.1 THE NUMBER OF COLLECTION POINTS:

The Value Added Tax has the widest base among sales taxes and also the greatest number of collection points. Thus the collection and inspection of the tax are normally more costly than for other forms of taxation.

Inspection is particularly costly under the indirect subtractive method where inspectors are sent out to check the validity of all the invoices. This problem becomes more acute as the frequency of collection increases. One way to lessen the burden of inspection is to adopt the accounts system rather than the invoicing system. Alternatively, one could streamline the method of collection and inspection as has been done in Germany.¹ Basically, the Germans have adopted the principle of self assessment. Every month the German tax-payer assesses himself and pays over the required amount to the authorities. His personal assessment is then checked at the time of the annual audit of the company's accounts for profits tax liability

Security is reinforced by the system of spot checks from time to time by inspectors of the Government tax department. Clearly, such a system can reduce dramatically the cost of inspection which may now be carried out at far less frequent intervals. The point to notice is that as long as collections are frequent (and not necessarily inspections), the benefits of short indirect tax periods will be retained.

7.2 MULTIPLE RATES AND "CATCHING UP".

The next major administrative problem arises from multiple rates. When one group of tax-payers is able to be classified at a lower rate than another there are always those who seek to be mis-classified. Furthermore, the definition of different classes of tax-payer usually gives rise to quite genuine cases of uncertainty. Clearly, this sort of differentiation increases the administrative burden of control. However, there is another probably more serious problem which arises from different rates. This is the problem called 'catching up' which was mentioned in the section on the tax base.

If the reduced rate is applied only in an intermediate stage in the production and distribution process, as may be the case where a firm buys raw materials which are subject to a lower rate than its own product, then the

benefit of the lower rate will not be passed on to the ultimate consumer. It will instead be passed forward by the tax-payer with whom it has 'caught up'. Furthermore, the actual VAT liability of later higher rated tax-payers would be increased. Finally, in situations where cash refunds are not allowed, the situation could be created where tax-payers whose inputs are taxed at higher rates than its outputs would become permanent creditors of the state.²

The only way in which catching up can be completely eliminated under the indirect subtractive method of calculation, is to use a single rate. The case of zero rating for exports is not relevant because here the lower rate attaches to the final stage in the home process.

7.3 THE BUFFER.

The VAT credit mechanism can be administered either by means of a buffer (butoir) as in France, or by means of a cash refund. According to the buffer system, any credit which may arise because the VAT content of inputs exceeds that of outputs has to be offset against a liability as and when such liability arises.

This can lead to situations in which the State owes the tax payer money for long periods of time. Forced loans of this nature can hardly be considered equitable. This would discriminate against capital intensive industries which may be deprived of working capital because of their inability to reclaim the VAT liability in their purchases. Again the situation is worse under systems of multiple rating. In such cases it is possible that a firm whose inputs are taxed at a higher rate than its outputs would never get a chance to recover its forced loan from the Government.

The buffer system places a particular burden upon research companies. These companies often have very small turnovers during their early years, whereas their capital investments may be very high. This means that they have to wait long periods to enjoy the benefit of their VAT credits. The fiscal group³ which helped to prepare the French economic plan recommended the elimination of the buffer system. Certain partial solutions have already been instituted in France. Manufacturers of selected products have been authorised to buy primary materials free of the VAT. Subsidiaries have been allowed to transfer their VAT credits to the parent company. Certain property leasing companies which are unable to utilise their VAT credits have been allowed

to transfer them to their tenants. And finally the law of 9th July 1970, provided for the reimbursement of the VAT credits in favour of manufacturers who had been subjected to the tax of $7\frac{1}{2}\%$. The group was not at all satisfied with these partial solutions and recommended the adoption of a more general solution, consisting in the progressive reimbursement of all the credits for the VAT. They felt that the most rational solution would consist in attacking the principle causes of the phenomenon, rather than its effects.

Furthermore, they pointed out that the Butoir was one aspect of the French system which had not been copied by the foreign countries which had come on to the VAT. This suggested reimbursement technique was generally well received but with a note of reserve from the Confederation General du Travail,⁴ who were concerned at the possibilities of embezzlement if the system were not strictly controlled. It seems that the general view, both in France and outside, is that this buffer system is something of an anachronistic aspect of the French system which is better avoided. A cash refund on VAT credits is preferable since it does away with the inequities and the investment disincentives of the buffer. The growing use of the computer should ensure an adequate cross checking of invoices and dampen any enthusiasm for falsifying purchase documents in order to gain the VAT credit.

7.4 THE DECALAGE

The decalage is a French expression which describes the system whereby current credits for the VAT may only be offset against the following months liability. This is another aspect of the credit mechanism which has been severely criticised by French businessmen, and was considered by the Fiscal group in their report for the Sixth Plan. The arguments against it are essentially financial. It is claimed that the decalage puts a strain on company liquidity, particularly in the following cases: Companies which operate in seasonal industries and buy large stocks at a certain time of the year, or companies whose stocks turnover in less than one month; Companies which form associations to do bulk buying; and rapidly growing companies. The representatives of business who argue against the decalage, point out that it was originally instituted for essentially budgetary reasons in 1948, and is no longer appropriate.

On the other hand, there are reasons for retaining the decalage, particularly where the government wishes to restrain the supply of liquidity in the economy.⁵

The system of immediate credits eliminates the long waiting periods and simplifies bookkeeping because each good or service does not have to be separately

traced. This means that it is possible for many tax payers to credit the VAT borne by acquired goods and services embodied in or relating to a final product, before the product is in fact sold. In short, the Government is providing credit for the flow of goods until the final stage.

The other arguments are less general, applying mainly to France. For that country, the Fiscal group estimated that it would cost an immediate 7 milliard francs and that this repayment would entail certain inflationary risks. Clearly, we need to distinguish between the case of a country which already has the decalage, and one which is thinking of instituting it. There are far more problems associated with dismantling and replacing this feature, than simply with not instituting it and, in view of the administrative difficulties, it would seem better for any new country thinking of the VAT, not to adopt a decalage.

7.5 TRANSITION.

The actual change from one tax system to another may give rise to its own problems. The treatment of inventory on hand at the time of the introduction of the VAT must be given special consideration.

In South Africa, wholesalers may be holding stocks which were previously subject to the selective sales taxes. Now unless a credit is granted for that tax, the wholesaler will be bearing the VAT burden, as well as the manufacturers sales tax burden. The 'Second Directive' authorised member states of the E.E.C. to grant refunds for previous turnover taxes in the form of lump sum credits in respect of inventories on hand at that time.⁶

There are a number of once and for all administration costs which occur during the transition phase. For example, manuals, pamphlets and guides must be printed to explain and clarify the general nature of the tax and the areas in which uncertainty might arise. The more it is possible to educate the public in advance, the less is the resistance and contention which arises from uncertainty in any new tax system. Thus programmes must be designed for the information media to propagate the functioning of the new system. Even where the public is well educated, there will be areas of interpretation of the law which need to be settled in the courts, and this too is a source of cost in transition.

Now the fact that change in itself does present a cost, may be regarded as one of the administrative disadvantages of the VAT. However, it is also possible to take the opposite point of view. If, for example, we regard all

tax systems as being in a state of evolution towards some super system which best achieves the goals of a society, then if the VAT is viewed as a later evolutionary type than the known alternatives, it is possible that an immediate change to the VAT would in fact reduce the overall transition cost which would have been incurred by changing from one intermediate system to another until finally arriving at the VAT. Thus one could argue that it would be cheaper for South Africa to switch from the selective sales tax direct to the VAT, than to adopt first a single stage general tax, and later the VAT.

7.6 EVASION.

The two outstanding administrative advantages of the VAT are the difficulty of evasion and the provision of statistical information. The evasion advantages were central to the French preference for the fractionated VAT over the single stage turnover taxes. Kauffman⁷ has summarised them as follows:

Firstly, under the single stage retail sales tax there is a great incentive to evade since it is so difficult to check whether the retailer has correctly reported his markup. This incentive is strengthened by the fact that the retailer saves much more money by evading

when the entire burden falls on him, than if he were required to pay only a portion of the tax. Secondly, there is a division of risk for the State. It is considered unlikely that there will be evasion simultaneously at all stages in the production distribution chain unless there is a conspiracy, thus at those stages where evasion does occur the State loses only part of its revenue. In the event of a conspiracy the probability of detection rises with the increase in the number of participants which is made necessary by the VAT.

The final point is the so called built-in policing mechanism. Owing to the fact that VAT must have been paid on purchases before it may be deducted from the sales, each tax-payer acts as a private inspector who will make sure that taxes at previous stages have been paid in order to minimise his own liability.

7.7 STATISTICS:

Characteristics such as the regular flow of information and the depth of penetration into the working of the economy which is provided by the comprehensive base, are much sought after by statisticians. The VAT return could be used in a number of ways. For example, it

would provide welcome support for the census data which are collected periodically. Accurate and up to date information of this sort is very helpful in formulation of the economic development programme (see du Plessis, 1971);⁸ in national income accounting and for monitoring stabilisation policy. With the exception of the Krogh study (1961)⁹ very little has been done in the field of input-output analysis in South Africa, partly because of the scarcity of statistical information. It is hard to imagine a statistical source more appropriate to this task than the VAT which is, after all, an input-output tax. The VAT also provides immediate statistics for cross checking to uncover evasion. At its most efficient this cross checking facility could not only be used within the VAT system, but also as a check against the profit tax figure. It was pointed out among the modes of calculation for the VAT, that Value Added would be equal to wages plus profits. Rearranging the expression we could say the profits should be equal to Value Added minus Wages. Now wages and salaries are readily obtainable from the Pay-As-You-Earn data, and coupled with the Value Added figure, this should give a unique cross check against the profits tax. Although attractive theoretically much of the practical value of such comprehensive cross checking is lost if there are exemptions which complicate the calculation.

Therefore, this should be regarded as one of the less immediate potential benefits. It is clear that the VAT return can be designed to render a wealth of statistical information. However, this benefit is not free and must be traded off against the cost of administrative complexity. The more information required on the form, the more complex it becomes to fill in and to administer. Fortunately, it is possible to retain a large measure of the statistical value with a relatively simple form if there is only one VAT rate, and the number of exemptions is limited. The simplest existing VAT return, is the one used by the Danish.¹⁰ A special accounting booklet is issued by the Directorate of Taxes, in which the businessman records his purchases, tax credits, sales, tax payments, and any comments he wishes to make. From this record he extracts tax payable, tax deductible and tax liable. These three figures are entered onto a post card with identification code and returned to the Revenue Office. This final post card return is very simple to administer, but does not render very much statistical information. If it were modified so as to include the totals from the accounting booklet under the purchase, sales and tax credits columns the statistical yield would be much greater, and there would be very little difference in administration.

On the other hand a form as complex as the French VAT return, with its numerous classifications, is probably not worth its weight in paper work. If the VAT return

is to be used to provide data for an input output model, it would be necessary for the tax payers' identification code to subsume an industrial classification code. The ideal statistical return would also subsume a product classification code. But until most businesses are running on computerised systems, this refinement is unlikely to be feasible.

The question of industrial classification is a common problem in input/output analysis¹¹ and could lead to some difficulty in specifying the sub codes. However, as long as there is only one VAT rate, there is no incentive to mis-classification on the part of tax payers and we may regard this as being more of a technical input/output problem than a VAT problem.

7.8 SUGGESTED CHARACTERISTICS OF A SYSTEM FOR SOUTH AFRICA:

From the preceding discussion it is apparent that the VAT may be designed and operated in a number of different ways. Many of the administrative problems which have arisen in other countries can be avoided if the system is correctly designed. A proposed system should try to incorporate the following characteristics.

1. There should be a single rate with minimal exemption, as suggested in the section on the base.

This would eliminate the catching up problem, it would simplify the design of the tax form, facilitate cross checking, and minimise the problems of partial exemption.

2. The mode of calculation should be of the indirect subtractive type, thus taking advantage of the policing mechanism. However, the functions of collection and inspection should be divorced in order to allow frequent collection while at the same time taking advantage of the administrative simplicity of the annual audit of accounts for inspection. The mechanism suggested here would be similar to that operating in Germany. A system of quarterly self assessment for the VAT with annual audits and irregular spot checks by Government would be consistent with the views of the Franzsen Commission regarding self assessment.
3. Both the French decalage and buffer systems should be avoided. Current tax credits on purchase should be set off against tax payable on current sales and where there is a net credit this should be refunded in cash.
4. Small businesses with turnovers of less than R10 000 per annum should be given the option of either coming

into the system at the normal rate, or of complete exemption. It has been shown (section on small business) that this would facilitate administration by reducing the number of tax payers, without excessively reducing the revenue base of the tax.

5. Transition should be made as smooth as possible by the institution of a careful programme for educating the public and business in advance of the tax. The State should adopt an accommodating policy with respect to once and for all type problems, such as inventory purchase before the institution of the tax. It is important that the public should not be antagonised in this period when they are forming their opinions towards the tax, especially in view of the fact that people tend to be most sceptical of things which they do not fully understand.

REFERENCES

1. STOUT D. "Economic Aspects of a Value Added Tax in the U.K." in Value Added Tax: The U.K. position and the European Experience, T.M. Rybczynski, ed., Blackwell, Oxford, 1969, p.9.
2. see "European Taxation" op cit pp.185/188
3. Fiscalite, op cit pp.81/83
4. Ibid.
5. "European Taxation" op cit p.195.
6. Ibid P.177.
7. KAUFFMAN J.R., op cit p.16
8. DU PLESSIS T.A. "The Official Economic Development Programme of South Africa", South African J.Econ. Dec. 1971.
9. KROGH D. "Input-Output Analysis of the South African Economy 1956/7," South African J.Econ., vol.29, 1961.

10. N.E.D.O. op cit p.12.

11. HOLTZMAN M., "Problems of Classification and Aggregation," in Wassily Leontief, Studies in the Structure of the American Economy, Oxford University Press 1953.

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APPENDIX 1

CALCULATION OF THE CORRELATION BETWEEN CHANGES IN
DISPOSABLE INCOME AND INVESTMENT.

FORMULAE

$$r = S_{xy} / S_x S_y$$

$$S_{xy} = \frac{1}{n-1} \left[\sum x_i y_i - \frac{\sum x_i \sum y_i}{n} \right]$$

$$S_x^2 = \frac{1}{n-1} \left[\sum x_i^2 - \frac{(\sum x_i)^2}{n} \right]$$

$$S_y^2 = \frac{1}{n-1} \left[\sum y_i^2 - \frac{(\sum y_i)^2}{n} \right]$$

$$Z = \frac{Z - PH}{\Theta_z} \quad \text{WHERE } \Theta_z = \frac{1}{\sqrt{n-3}}$$

VALUES CALCULATED FROM RAW DATA

$$S_{xy} = 22\,849,057$$

$$S_y = 223,465$$

$$S_x \times S_y = 44\,340,819$$

$$r = ,51530$$

$$r^2 = ,26319$$

$$Z = ,57$$

$$Z = ,1244$$

RAW DATA

SOURCE: ADAPTED FROM THE SUPPLEMENT TO THE SOUTH
AFRICAN RESERVE BANK QUARTERLY BULLETIN, JUNE 1971
TABLE Nos. 1,6,1,16.

YEAR	CHANGES IN INVESTMENT (Xi) (R. MILLIONS)	CHANGES IN DISPOSABLE INCOME (Yi) (R MILLIONS)
1946/7	104	142
47/8	- 18	211
48/9	- 23	153
49/0	30	348
50/1	193	190
51/2	- 82	146
52/3	22	352
53/4	92	257
54/5	47	195
55/6	- 32	253
56/7	55	203
57/8	- 34	116
58/9	- 60	224
59/0	160	243
60/1	- 52	258
61/2	- 25	341
62/3	301	390
63/4	142	570
64/5	208	560
65/6	- 158	549
66/7	490	698
67/8	- 383	525
68/9	443	882
69/70	<u>424</u>	<u>860</u>
Totals	<u>1844</u>	<u>8666</u>

APPENDIX II.

EUROPA INSTITUTE.

TABLES SHOWING THE EFFECT OF
VAT ON PRICES, CONSUMPTION,
PRODUCTION AND EMPLOYMENT.

Source: Collection Etudes:

Serie Concurrence - Rapprochement.

Des Legislations No. 16

Bruxelles 1970,

Pp. 55- 58.

Tableau 7 : Effets sur les prix à la consommation, par branche d'activité, des modifications de politique résultant de l'unification fiscale dans le cadre de la C.E.E. (variation en %)

Branches d'activité	Majoration des taux de la TVA	Majoration des taux de la TVA et réduction proportionnelle de l'impôt sur les revenus des personnes physiques	Majoration des taux de TVA combinée à une augmentation des dépenses publiques
Agriculture	4,5	5,0	6,0
Industries extractives	3,3	3,9	4,4
Industrie alimentaire (produits animaux)	3,9	4,0	4,5
Industrie alimentaire (autres produits)	3,5	3,8	4,4
Boissons et tabac	3,4	3,8	4,5
Textiles	3,3	3,9	4,5
Habillement et chaussures	3,4	4,2	4,9
Papier	3,4	3,9	4,5
Autres industries	3,9	4,3	4,8
Industrie chimique et raffineries de pétrole	3,6	3,6	4,2
Industrie métallurgique	3,1	3,4	3,9
Construction mécanique	3,5	4,2	4,7
Industrie électrotechnique	3,4	4,0	4,6
Matériel de transport	3,5	3,9	4,6
Eau, gaz, électricité	3,9	4,2	4,7
Construction du bâtiment	3,6	4,0	4,2
Propriété de locaux d'habitation	1,0	1,3	1,0
Navigation maritime et aérienne	0,6	0,5	1,0
Autres transports et communications	3,4	4,0	5,0
Autres services	2,6	3,2	4,2
Total	3,2	3,7	4,4

Tableau 8 : Effets sur la consommation et sur la demande finale globale, par branche d'activité, des modifications de politique résultant de l'unification fiscale dans le cadre de la CEE (variations en %)

Branches d'activité	Consommation			Demande finale globale		
	Majoration des taux de la TVA	Majoration des taux de TVA et réduction combinée à proport. de une augmen- l'impôt sur les revenus des personnes physiques	Majoration des taux de la TVA et réduction combinée à proport. de une augmen- tation des dépenses publiques	Majoration des taux de la TVA	Majoration des taux TVA et réduction proportionnelle de l'impôt sur les revenus des personnes physiques	Majoration des taux TVA combinée à une augmentation des dépenses publiques
Agriculture	-2,0	-1,3	-2,2	-1,4	-1,5	-1,9
Industries extractives	0,0	0,0	0,0	-0,7	-1,5	-0,7
Industrie alimentaire (produits animaux)	-1,2	-0,5	-1,0	-0,9	-0,4	-0,7
Industrie alimentaire (autres produits)	-1,1	-0,4	-0,9	-0,9	-0,5	-0,9
Boissons, tabacs	-2,2	-0,8	-2,3	-2,0	-0,8	-2,1
Textiles	-2,0	-0,9	-2,2	-1,3	-1,2	-1,7
Habillement et chaussures	-2,3	-1,2	-2,7	-2,2	-1,4	-2,7
Papier	-4,3	-2,9	-2,9	-1,3	-1,5	-1,6
Autres industries	-3,2	-1,7	-3,1	-2,5	-1,9	-2,0
Industries chimiques et raffineries de pétrole	-3,5	-0,7	-2,7	-1,0	-0,7	-1,0
Industrie métallurgique	-	-	-	-0,5	-0,9	-0,7
Construction mécanique	-4,2	-2,0	-3,8	-1,4	-1,2	-1,2
Industrie électrotechnique	-3,9	-1,5	-3,4	-1,1	-1,1	-1,3
Matériel transport	-3,5	-1,3	-3,1	-1,2	-0,9	-1,1
Eau, gaz, électr.	-1,6	-0,2	-1,3	-1,4	-0,2	-1,0
Construction du bâtiment	-1,8	-0,7	-0,7	-0,3	-0,2	3,8
Propriété de locaux d'habitation	0,5	2,5	1,8	0,5	2,5	1,8
Navigation maritime et aérienne	3,8	8,8	10,0	0,1	0,2	0,2
Autres transports	-5,2	-2,5	-6,0	-1,9	-0,9	-2,1
Autres services	-3,1	-0,6	-3,7	-2,2	-0,4	-2,0
Commerce	-2,4	-1,0	-2,3	-1,9	-1,0	-1,9
Importations directes	-2,0	-0,1	-1,4	.	.	.
Total	-2,2	-0,5	-2,0	-1,2	-0,6	-0,6

Tableau 9 : Effets sur la production, par branche d'activité, des modification de politique résultant de l'unification fiscale dans le cadre de l C.E.E. (variations en %);

Branches d'activité	Majoration des taux de la TVA	Majoration des taux de la TVA et réduction proportionnelle de l'impôt sur les revenus des personnes physiques.	Majoration des taux de la TVA combinée à une augmentation des dépenses publiques.
Agriculture	- 0,9	- 0,7	- 1,1
Industries extractives	- 0,9	- 0,7	- 0,6
Industrie alimentaire (produits animaux)	- 1,0	- 0,5	- 0,8
Industrie alimentaire (autres produits)	- 1,3	- 0,8	- 1,3
Boissons et tabac	- 1,7	- 0,7	- 1,8
Textiles	- 1,6	- 1,3	- 1,9
Habillement et chaussures	- 2,0	- 1,3	- 2,5
Papier	- 1,5	- 1,1	- 1,1
Autres industries	- 1,8	- 1,1	- 0,3
Industrie chimique et raffineries de pétrole	- 1,3	- 0,8	- 0,9
Industrie métallurgique	- 1,2	- 1,3	- 0,7
Construction mécanique	- 1,3	- 1,0	- 0,6
Industrie électrotechnique	- 1,1	- 1,0	- 1,2
Matériel de transport	- 1,2	- 0,9	- 1,0
Eau, gaz, électricité	- 1,5	- 0,5	- 1,0
Construction du bâtiment	- 0,3	0,0	3,5
Propriété de locaux d'habitation	0,5	1,8	1,6
Navigation maritime et aérienne	0,1	0,2	0,2
Autres transports et communications	- 2,0	- 0,9	- 1,7
Autres services	- 1,8	- 0,4	- 1,5
Commerce	- 1,6	- 1,0	- 1,6
Total	- 1,2	- 0,6	- 0,8

Tableau 10 : Effets sur l'emploi, par branche d'activité, des modifications de politique résultant de l'unification fiscale dans le cadre de la C.E.E. (variations en %).

Branches d'activité	Majoration des taux de la TVA	Majoration des taux de la TVA et réduction proportionnelle de l'impôt sur les revenus des personnes physiques.	Majoration des taux de la TVA combinée à une augmentation des dépenses publiques.
Agriculture	- 0,1	0,0	- 0,1
Industries extractives	- 0,1	0,0	- 0,1
Industrie alimentaire (produits animaux)	- 0,2	- 0,1	- 0,2
Industrie alimentaire (autres produits)	- 0,2	- 0,2	- 0,3
Boissons et tabac	- 0,1	- 0,1	- 0,1
Textiles	- 0,4	- 0,3	- 0,5
Habillement et chaussures	- 0,5	- 0,4	- 0,7
Papier	- 0,3	- 0,2	- 0,2
Autres industries	- 0,3	- 0,2	- 0,4
Industrie chimique et raffineries de pétrole	- 0,4	- 0,3	- 0,3
Industrie métallurgique	- 0,1	- 0,1	0,0
Construction mécanique	- 0,3	- 0,3	0,0
Industrie électrotechnique	- 0,1	- 0,2	- 0,1
Matériel de transport	- 0,3	- 0,3	- 0,2
Eau, gaz, électricité	- 0,3	- 0,2	- 0,2
Construction du bâtiment	0,0	0,0	2,9
Propriété de locaux d'habitation	-	-	-
Navigation maritime et aérienne	0,0	0,0	0,0
Autres transports et communications	- 0,2	- 0,1	- 0,1
Autres services	- 0,7	- 0,2	- 0,6
Commerce	- 0,2	- 0,1	- 0,1
Total	- 0,3	- 0,2	- 0,2

BIBLIOGRAPHY

ATKINSON A. B. "How Progressive should Income Tax be" in E. S. Phelps (Ed.) Economic Justice, Penguin 1973.

AULD D. A. L. "Automatic Fiscal Stabilizers: Problems of Identification and Measurement" in Public Finance - Volume XXVI No.4/1971 The Hague.

BAKER J. E. Commission. Report of the Committee on Value added turnover Taxation. Salisbury, Rhodesia 1967.

BALAPOULUS E. T. Fiscal Policy Models of the British Economy. Amsterdam 1967.

BRONFENBRENNER M. "The Japanese Value added Sales Tax". National Tax Journal, 111, 1950.

BROOKINGS INSTITUTION. Report on a Survey of the Organisation and Administration of the State and Country Governments of Alabama. Montgomery, Alabama 1932.

BROOMAN F. S. Macro Economics.

Allen and Unwin 1962.

BROWN E. C. "The Static Theory of Automatic
Fiscal Stabilizers". Journal of Political
Economy. October 1955.

BROWN T. M. Specification and Uses of Econometric
Models. MacMillan. St. Martin's Press, 1965.

CHANCELLOR OF THE EXCHEQUER. Value-Added Tax.
H.M.S.O. London 1971.

CHRIST C. F. Econometric Models and Methods.
John Wiley and Sons, Inc. New York 1966.

COLLECTION ETUDES. Serie Concurrence. Rapprochement.
Des Legislations No. 16. Bruxelles 1970.

DUE J. F. "Sales Taxation and the Consumer".
American Economic Review. December 1963.

DUE J. F. The Structure and Operation of Sales
Taxes. Panama 1967.

ECKSTEIN O. "European and U.S. Tax Structure -
The Role of Direct and Indirect Tax."
National Bureau of Economic Research and Brookings
Institute. Princetown University Press 1964.

EDGEWORTH F. Y. Papers relating to Political
Economy. Vol.2. Royal Economic Society, 1925.

EGRET G. Les Amenagements De La Nouvelle T.V.A.
Souhaites Pas Les Entreprises in: La Reforme De La
T.V.A. Dunod 1968.

EUROPEAN TAXATION. International Bureau of Fiscal
Documentation. Vol. 7. July. August. Amsterdam
1967.

FAIR R. C. A Short-Run Forecasting Model of The
United States Economy, Heath Lexington Books.
Massachusetts 1971.

FISCALITE. Rapports des comites du VI^e Plan,
"La Documentation Francaise. Paris 1971.

FRANZEN D. G. COMMISSION. "Taxation in South Africa"
First Report of the Commission of Enquiry into Fiscal
and Monetary Policy in South Africa. November 1968
Pretoria.

FRIEDMAN M. The Welfare Effects of an Income
and Excise Tax.

J. Polit Econ. Vol.60 No. 1, 1952.

FRIEDMAN. M. Price Theory, Ch.4, Aldine.
Chicago, 1968.

FROMM G. and TAUBMAN P. Policy Simulations
with an Econometric Model.
Brookings Institution Washington, 1968.

GORDONS B. J. "The Incidence of Corporation
Tax". Amer. Econ. Review. Vol.57 No.4, 1967.

GRAAFF J. de V. "The Future of Taxation".
South African Journal of Economics. September 1968.

GRAAFF J. de V. 1957 "Some Elements of
Welfare Economics" In: Economic Justice.
E. S. Phelps (Ed.) Penguin 1973.

HANSEN B. Fiscal Policy In Seven Countries
1955 - 1965. OECD Paris 1969.

HICKS J. R. Value and Capital. Oxford
University Press 1939.

HICKS U. K. "The Terminology of Tax Analysis".
Economic Journal Vol. 56 No.221. 1946.

HOLTZMAN M. "Problems of Classification and
Aggregation" in Wassily Leontief. Studies in
the Structure of the American Economy.
Oxford University Press 1953.

HOUGHTON R. W. Public Finance.
Penguin 1970.

ITO H. "The Value Added Tax in Japan".
Annals of the Hitotsubashi Academy No. 1.
October 1950.

KAUFFMAN J. R. "Le Regime Definitif" in
La Reforme de la T.V. A. Dunod. Paris
1968.

KAUFFMAN J. R. "Dispositions Transitoires" in
La Reforma de la T.V. A. Dunod. Paris
1968.

KRAUSS and JOHNSON. "Border Taxes, Border Tax
Adjustments, Comparative Advantage and the Balance of
Payments". Canadian Journal of Economics.
November 1970 Vol.3.

KROGH D. "Input-Output. Analysis of the South African Economy, 1956-57".

South African Journal of Economics Vol.29 1961.

KRYZNIAK M. and MUSGRAVE R. A. The Shifting of the Corporation Income Tax.

Baltimore 1963.

LAUMAS G. S. The Shifting of Corporation Income Tax. A Study with reference to Indian Corporations. Pub. Finance Vol.21. Nov. 1966.

LINDHOLM R. W. "The Value Added Tax - A Short Review of the Literature".

The Journal of Economics 1970.

LITTLE I. M. D. "Direct versus Indirect Taxes". Economic Journal. Vol.61 No.243. 1951.

LITTLE I. M. D. 1951 Social Choice and Individual Values in Economic Justice.

E. S. Phelps (Ed.) Penguin 1973.

LINDAHL E. (1919). Just Taxation. A Just Solution, p.p. 168-76 in R. A. Musgrave and A. T. Peacock (Eds.) Classics in the Theory of Public Finance. MacMillan 1958

MARKOWITZ H. M. Portfolio Selection.
John Wiley. New York 1959.

MARSHALL A. Principles of Economics.
London. MacMillan 1938.

MIRRIEES J. A. "An Exploration in the Theory of
Optimum Income Taxation".
Rev.Econ.Stud. April 1971.

MORAG A. "Is the Economic Efficiency of
Taxation Important".
Economic Journal Vol.69 No.273, 1959.

MUSGRAVE R. A. The Theory of Public Finance.
McGraw. Hill, New York. 1959.

MUSGRAVE R. A. MUSGRAVE P. B.
Public Finance in Theory and Practise.
McGraw. Hill, New York. 1973.

NATIONAL BUREAU OF ECONOMIC RESEARCH.
Foreign Tax Policies and Economic Growth.
New York 1966.

NATIONAL ECONOMIC DEVELOPMENT OFFICE, (N.E.D.O.)
H.M.S.O. London 1969.

OAKLAND W. H. "Automatic Stabilisation and the Value Added Tax" in Studies in Economics Stabilisation, Brooking Institution. Washington 1968.

THE ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION (O.E.E.C.) The Influence of Sales Taxes on Productivity. Project No.315. Paris 1958.

PARKINSON D. A. A practical introduction to Systems for Value Added Tax. Transcripta Books. London 1972.

DU PLESSIS T. A. "The Official Economic Development Programme of South Africa". South African Journal of Economics. December 1971.

QUARTERLY BULLETIN OF STATISTICS.

S. A. Reserve Bank. March 1973 Table S.73.

RICHARDSON D. Report of the Committee on Turnover Taxation. H.M.S.O. 1964.

RIVETT P. Principles of Model Building, P.82. Wiley and Sons 1972.

ROYAL COMMISSION ON TAXATION (CANADA). 1966

"A Proposal for Taxation Reform" in R. W. Houghton (Ed.)
Penguin 1970.

RYBCZYNSKI T. M. The Value Added Tax. The U.K.
Position and the European Experience.
Basil Blackwell. Oxford 1969.

SADIE J. L. 1970. "Die Taxgevoede Waarde Belasting".
South African Journal of Economics. Vol.38, 1970.

SHOUP MISSION. "Report on Japanese Taxation".
Tokyo 1949 Vol. 1.

SIDGWICK H. 1893. The Reasonableness of
Utilitarianism in Economic Justice.
E. S. Phelps (Ed.) Penguin 1973.

SIMONS H. C. 1938 "The Comprehensive Definition of
Income".

In R. W. Houghton Public Finance. Penguin 1970.

SIMONS H. C. 1938 "The case for Progressive Taxation"
Quoted in R. W. Houghton (Ed.) "Public Finance."
Penguin 1970.

STOUT D. K. "Economic Aspects of a Value-Added Tax in the U.K."

In Value Added Tax : The U.K. Position and the European Experience.

T. M. Rybczynski (Ed.) Blackwell. Oxford 1969.

SOUTH AFRICAN STATISTICS. Table LZ6.

Department of Statistics. Pretoria 1972.

STATISTICAL SURVEY In connection with the Budget Speech. 1973.1974. Pretoria.

SULLIVAN C.K. (1965). The Tax on Value Added. Columbia University Press.

TAIT A. A. Value Added Tax.

McGraw Hill 1972.

THIRD REPORT OF THE COMMISSION OF INQUIRY INTO AGRICULTURE. Pretoria. 1971.

THOMSON T. G. "The Value added Tax and the Cost of Change".

The South African Journal of Economics. Quarterly Journal Vol.42 (1) 1974.

TOBIN J. (1970. "On Limiting the Domain of
Inequality" in Economic Justice.

E. S. Phelps (Ed.) Penguin 1973.

TURE N. B. "Economics of the Value Added Tax".

American Enterprise Institute.

Washington D. C. 1972.

VAN RENSBURG J. J. "Private Consumption

Expenditure in South Africa 1947-1972, in South Africa.

Reserve Bank Quarterly Bulletin. December 1973.

WALKER D. 1955. Direct v Indirect Taxes in

Public Finance. Penguin 1970.

WEDERT J. M. "Les Collectivites Locales Et La T.V.A."

Debat Assemblee Nationale.

No.1208 Juin 1971

WHEATCROFT G. S. A. and AVERY JONES J. F.

Encyclopedia of Value Added Tax.

Sweet and Maxwell. London 1973.